

# R E P O R T.

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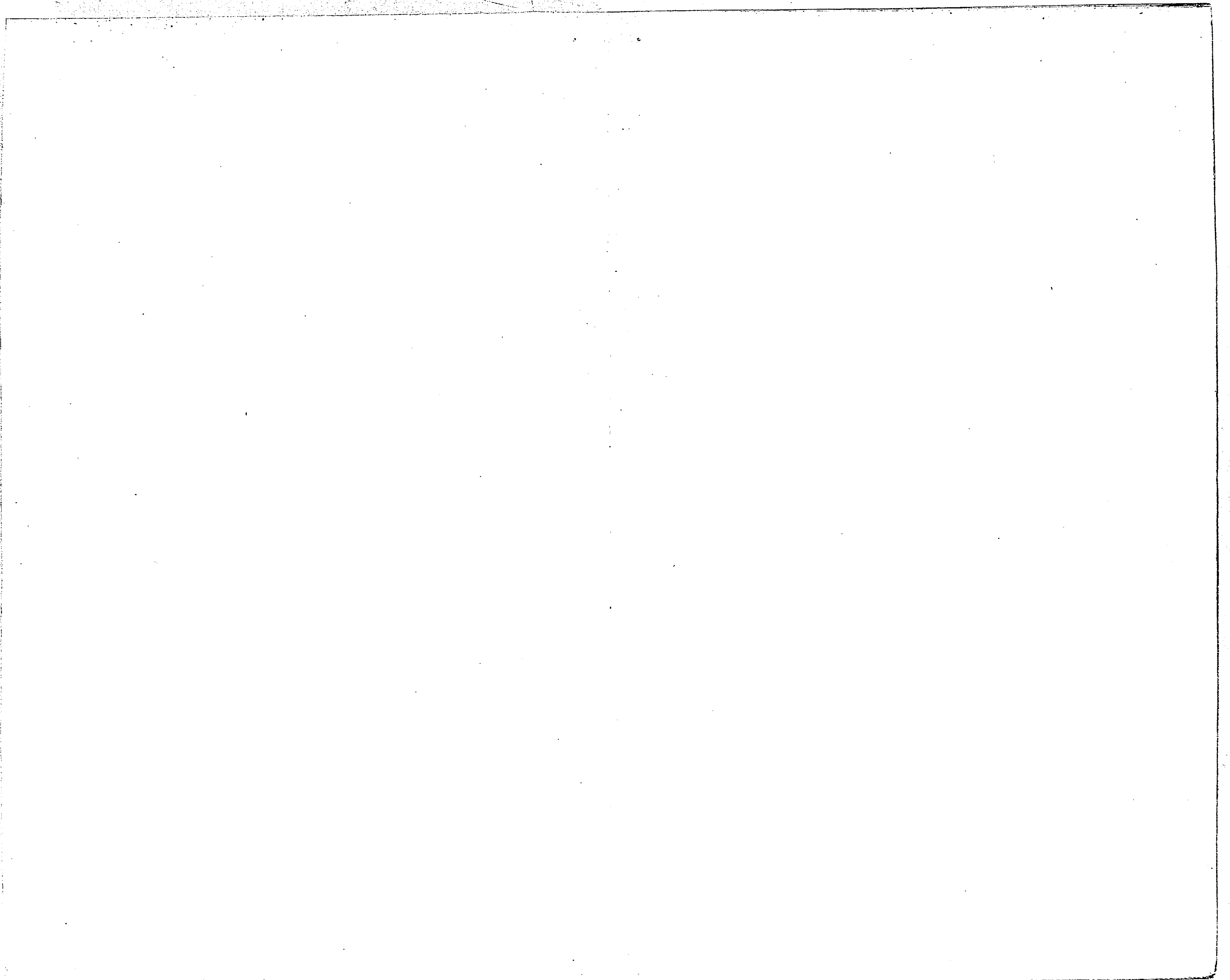
## ADULTERATION OF FOOD, &c.

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*Ordered, by The House of Commons, to be Printed,  
22 July 1856.*

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[*Price 4s. 4d.*]



# R E P O R T

FROM THE

SELECT COMMITTEE

ON

**ADULTERATION OF FOOD, &c.;**

TOGETHER WITH THE

PROCEEDINGS OF THE COMMITTEE,

MINUTES OF EVIDENCE,

APPENDIX AND INDEX.

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*Ordered, by The House of Commons, to be Printed,  
22 July 1856.*

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*Martis, 12<sup>o</sup> die Februarii, 1856.*

*Ordered, THAT a Select Committee be appointed on the Adulteration of Food, Drinks, and Drugs.*

*Martis, 19<sup>o</sup> die Februarii, 1856.*

Committee nominated, of—

Mr. Scholefield.  
Mr. Cowper.  
Mr. Alderman Cubitt.  
Viscount Ebrington.  
Viscount Goderich.  
Mr. Gregson.  
Lord Claud Hamilton.  
Mr. Kinnaird.

Mr. Knight.  
Mr. Moffatt.  
Mr. Otway.  
Mr. Peacocke.  
Mr. Sheridan.  
Mr. Swift.  
Mr. Charles Villiers.  
Mr. Wise.

*Ordered, THAT the Committee have power to send for Persons, Papers, and Records.*

*Ordered, That Five be the Quorum of the Committee.*

*Martis, 22<sup>o</sup> die Julii, 1856.*

*Ordered, THAT the Committee have power to Report their Observations, together with the Minutes of Evidence taken before them, to The House.*

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## R E P O R T.

THE SELECT COMMITTEE appointed to inquire into the ADULTERATION of FOOD, DRINKS, and DRUGS, and who were empowered to Report their Observations, together with the MINUTES of EVIDENCE, from time to time to The House;—HAVE made further progress in the Matters to them referred, and have agreed to this their final REPORT:—

YOUR COMMITTEE have inquired into the subject referred to them, and in the course of their investigation have examined a great number of witnesses, comprising men of high scientific attainments, as well as those whose practical knowledge as dealers seemed to point them out as persons likely to give useful information.

Among the scientific witnesses examined, were: Dr. Hassall, well known by his able investigations of the subject of adulterations of food; Mr. Warington, chemical operator to the Apothecaries' Company; Dr. Normandy; Mr. Simon and Dr. Letheby, the late and present officers of health in the city of London; Dr. Thompson, professor of chemistry at St. Thomas's Hospital; Mr. Redwood, professor of chemistry to the Pharmaceutical Society; Mr. Simmonds, author of a work on the commercial products of the vegetable kingdom; Mr. Postgate, a surgeon, and chemical lecturer in Birmingham; Mr. Phillips, chief officer of the chemical department of the Board of Inland Revenue; Dr. Taylor, professor of medical jurisprudence, at Guy's Hospital; Dr. Waller Lewis, medical officer to the General Post-office; Mr. Quekett, professor in the Royal College of Surgeons; Mr. Thompson, an analytical chemist; Mr. Blyth, lecturer on natural philosophy, at St. Mary's Hospital; Dr. Challice; Mr. Wakley, coroner for Middlesex; Mr. Jacob Bell; Dr. Carpenter, of University College; Dr. Moore Neligan, of Dublin; Dr. Richter; and Dr. Bingley, professor at the Medical Institute of Sheffield.

Though the witnesses differed both as to the extent to which adulteration is carried on and as to its nature and effects, your Committee cannot avoid the conclusion that adulteration widely prevails, though under circumstances of very various character. As regards foreign products, some arrive in this country in an adulterated condition, while others are adulterated by the English dealer. Other commodities, again, the produce of this country, are shown to be in an adulterated state when passing into the hands of the dealers, while others undergo adulteration by the dealers themselves.

Not only is the public health thus exposed to danger, and pecuniary fraud committed on the whole community, but the public morality is tainted, and the high commercial character of this country seriously lowered both at home and in the eyes of foreign countries. Though, happily, very many refuse, under every temptation, to falsify the quality of their wares, there are, unfortunately, large numbers, who, though reluctantly practising deception, yield to the pernicious contagion of example, or to the hard pressure of competition forced upon them by their less scrupulous neighbours.

Without entering into voluminous details of the evidence taken, your Committee would enumerate the leading articles which have been proved to be more or less commonly adulterated; these are, arrowroot, adulterated with



potato and other starches; bread, with potatoes, plaster of Paris, alum, and sulphate of copper; bottled fruits and vegetables with certain salts of copper; coffee with chicory, roasted wheat, beans, and mangel wurzel; chicory with roasted wheat, carrots, sawdust, and Venetian red; cocoa with arrowroot, potato-flour, sugar, chicory, and some ferruginous red earths; cayenne with ground rice, mustard husk, &c., coloured with red lead, Venetian red, and turmeric; gin, with grains of Paradise, sulphuric acid, and cayenne; lard with potato-flour, mutton suet, alum, carbonate of soda, and caustic lime; mustard with wheat-flour and turmeric; marmalade with apples or turnips; porter and stout (though sent out in a pure state from the brewers) with water, sugar, treacle, salt, alum, cocculus Indicus, grains of Paradise, nux vomica, and sulphuric acid; pickles and preserves with salts of copper; snuff with various chromates, red lead, lime, and powdered glass; tobacco with water, sugar, rhubarb, and treacle; vinegar with water, sugar, and sulphuric acid; jalap with powdered wood; opium with poppy capsules, wheat-flour, powdered wood, and sand; scammony with wheat-flour, chalk, resin, and sand; confectionery with plaster of Paris and other similar ingredients, coloured with various pigments of a highly poisonous nature; and acid drops, purporting to be compounded of Jargonelle pear, Ribstone pippin, lemon, &c., with essential oils containing prussic acid or other dangerous ingredients.

The adulteration of drugs is extensively practised; and when it is borne in mind that the correctness of a medical prescription rests on an assumed standard of strength and purity in the drugs or compounds employed, and how frequently life itself depends upon the efficacy of the medicines prescribed, it is difficult to exaggerate the evils arising from this prevalent fraud.

The adulteration of drinks deserves also special notice, because Your Committee cannot but conclude that the intoxication so deplorably prevalent is in many cases less due to the natural properties of the drinks themselves, than to the admixture of narcotics or other noxious substances intended to supply the properties lost by dilution.

Though adulterations prevail more or less in all districts, it may be assumed, as a rule, that the poorer the district, the greater is the amount of adulteration. Nor have the poor the same power to protect themselves against such frauds as their richer neighbours; they are necessarily limited to such means of purchase as are afforded by the immediate locality in which they reside, and are, moreover, too often bound to one dealer by the facilities of credit which he affords them.

These adulterations may be classified under three heads, those of which the object is to lower the price of the article adulterated, by the admixture of substances of a cheaper kind; those which are intended to improve the appearance of the adulterated article, and thus in many cases to deceive the public as to its quality; and those which are practised for the purpose of simulating some property injured or destroyed in the process of adulteration.

Adulterations in each of these classes are of two kinds, those in which are employed substances of an innocuous character, and those in which the mixtures are more or less injurious to health, either directly by the noxious properties of the ingredients, or indirectly by lowering the nutritive qualities of the article adulterated.

In dealing with these various adulterations, it is necessary to distinguish between the pecuniary fraud practised on the public, and the injury to public health. If, as regards the adulteration of articles with substances of a cheaper and innocuous character, the public derive the full benefit of this cheapness in a lower price, it would be difficult, if not unwise, for the Legislature to interfere, unless it could do so by requiring that every such article be sold as a mixture, as distinguished from the article in its pure state. This the law already requires as to the article of coffee, and also as to the article of bread, which, unless made of wheat flour alone, must be distinctly marked with the letter M. But, whenever an article is so adulterated as to involve pecuniary fraud or injury to health, it appears to your Committee to be the duty of the Legislature to provide some efficient remedy.

It has been objected that the best course will be to leave the buyer to take care of himself. But there are many adulterations which it is impossible for the buyer to detect. Already the law takes note of frauds in weights and measures, of injuries likely to result to the public health from the sale of unwholesome animal

animal food, and indeed of many adulterations, though in most cases only with a view to fiscal considerations, and not to those of a moral or sanitary character.

It is said, too, that there are many frauds which legislation cannot reach or punish. But, on the other hand, it would be difficult to tell the numberless frauds which legislation may prevent.

The great difficulty of legislating on this subject lies in putting an end to the liberty of fraud without affecting the freedom of commerce.

With a view to form an opinion as to the best remedy for this growing evil, your Committee have obtained evidence as to the law on adulterations in other countries, and especially in France, Belgium, Germany, and the United States. In this object your Committee have been materially assisted by returns procured through the kindness of Lord Clarendon from some of our Ministers at foreign Courts.

As to the present state of the law in this country, your Committee received much valuable information from Mr. S. R. Goodman, the legal adviser to the Justices of the city of London.

The following is a brief statement of the laws of different countries on the subject of adulterations.

In France, a law, bearing date the 27th March 1851, confirmed and extended the penal code to all adulterations in "alimentary and medicinal substances." To this law was added one of the 5th May 1855, applicable to the adulteration of drinks. The law of March 1851, was founded upon two Reports of a Commission of Inquiry, bearing date the 24th January and 25th February 1851. The law of May 1855 was preceded by a like Report made the 29th March 1855.

The provisions of these laws apply: 1st. To those who shall adulterate any alimentary or medicinal substances intended for sale.

2d. To those who shall sell, or expose for sale such substances, knowing them to be adulterated.

If the article adulterated contains substances injurious to health, the fine ranges from 50 to 500 francs, with imprisonment from three months to two years; these punishments being applicable even in cases where the adulteration is known to the buyer or consumer.

A penalty of 16 to 25 francs, and imprisonment from six to ten days, or one of these modes of punishment, according to circumstances, is imposed on those who, "without legitimate cause," shall have in their shops or warehouses any such adulterated articles. If the adulterated article be injurious to health, the fine may be increased to 50 francs, and the imprisonment to 15 days.

The fine and imprisonment may be doubled if a delinquent has been previously convicted within five years of his last offence.

The adulterated articles shall be confiscated, and if injurious to health, destroyed.

The authorities may make public announcement of the particulars of the offence by placard and advertisement.

A special "Ordonnance de Police," in Paris, applies to the manufacture and sale of confectionery, and forbids the use, for colouring, of all mineral matter, and all poisonous vegetable matter. Confectioners are required to envelope coloured confectionery in paper marked with their name and address, and are made personally responsible for accidents arising from the consumption of the articles they sell. Confectioners' shops are to be visited, for the purpose of seeing that they conform to these regulations. As an additional precaution, the "Conseil de Salubrité" of the city of Paris, a body consisting of eminent physicians, chemists, and other persons, publishes a list of colouring matters which may be employed by confectioners, with instructions as to the manner of mixing them, and a list of the colouring matters, the use of which is expressly forbidden.

In Belgium, a law, bearing date the 17th March 1856, declares that all who shall have adulterated or caused to be adulterated any articles of food or drink intended for sale, shall be liable to an imprisonment from eight days to one year, and a fine from 50 to 1,000 francs, or to either punishment alone.

The penalties are divided into two classes. The first applies to persons who have adulterated, or caused to be adulterated, eatables, drinkable liquors, or any articles of food intended to be offered for sale, the penalty being, as already stated, from eight days to a year's imprisonment, and a fine of from 50 to 1,000 francs.

francs. In the same class are included persons who shall knowingly sell, or expose for sale, adulterated articles, or shall have given instructions calculated to facilitate or lead to such adulteration.

The second class comprises persons who unintentionally sell, or expose for sale, adulterated food, and who are liable only to simple police punishments.

The mere fact of knowingly keeping adulterated articles of food intended for sale, renders the person so offending liable to imprisonment from a week to a year, and to a fine of from 26 to 500 francs. When the punishment reaches six months' imprisonment, the court can withdraw the "patente" (license to trade) from the offender during the whole period of his incarceration, which is equivalent to preventing him from carrying on his business. A copy of the conviction is to be posted up at the door of the person condemned, or inserted in such journals as the Court may determine, at the expense of the culprit. All adulterated articles of food in the possession of the delinquent are to be confiscated.

In Prussia, the municipal law enacts that "no person shall knowingly sell or communicate to other persons for their use articles of food or drink which possess properties prejudicial to health, under a penalty of fine or bodily punishment." Those who are found guilty of knowingly selling victuals which are damaged or spoiled, or mixed with deleterious additions, may be held incapable of carrying on the same branch of business. The articles may be confiscated. Whosoever mixes articles of food with foreign substances, for the purpose of increasing their weight or bulk, or of deceiving purchasers as to their quality, is liable to be proceeded against for fraud. With regard to drugs the law forbids their being dispensed by any other persons than apothecaries legally appointed.

In Hamburg, adulterations of food are the subject of police regulations, involving fine and imprisonment.

In Lubeck, such adulterations are treated as acts of fraud, and dealt with by police authority. The grinding of blighted corn with good corn is prohibited.

In Holland, by a law of the 22d May 1829, any person adulterating bread or flour, or any article of food or drink, with any poisonous matter, is liable to an imprisonment of from two to five years, and a fine of from two hundred to five hundred florins, and to the revocation of his "patente" during his imprisonment. The same penalties apply to those who knowingly sell such adulterated articles, and to those who supply the forbidden ingredient, knowing the purpose for which it is to be used. A less severe punishment is inflicted on those who adulterate articles of food or drink with ingredients not poisonous, but injurious to health, as well as on those who offer them for sale. To the other penalties are added the publication of the names of the offenders, and the confiscation of the adulterated goods.

In Spain, the law, besides authorising the inspection of drugs at the Custom-house, permits the dispensing of drugs only by apothecaries legally appointed, and absolutely forbids the sale of secret medicines.

In the United States special laws have been passed "to prevent the importation of adulterated and spurious drugs and medicines." By these it is enacted that all drugs and medicines shall, before passing the custom-house, be examined and appraised, as well in reference to their quality and purity as to their value. All medicinal preparations are to have the name of the manufacturer affixed to each parcel. Adulterated or deteriorated drugs and medicines are not to be allowed to pass the custom-house; but the owner or consignee has the right of calling for a re-examination, or further analysis, if dissatisfied with the examiner's return. The Secretary of the Treasury is to appoint suitably qualified persons, at each of the ports of New York, Boston, Philadelphia, Baltimore, Charleston, and New Orleans, as special examiners of drugs and medicines. A Treasury Minute prescribes the manner of carrying out the Act, and gives a list of the principal articles, with the result of special tests agreeing with the standards referred to in the law; and all articles are entitled to entry when ascertained by analysis to conform to those standards. Patent and secret medicines are subject to the same examination, and disposition after examination, as other medical preparations, and are not permitted to pass the custom-house unless the examiner be satisfied that they are fit and safe to be used for medicinal purposes.

In the State of New York, the law expressly forbids adulterations of flour, hops,

hops, and spirits. Any one knowingly offering for sale flour mixed with Indian meal, or with any other mixture, or with unsound flour, is liable to a penalty of five dollars for every cask. Any one mixing with hops any foreign or improper substances, or in any manner adulterating their quality, is deemed guilty of misdemeanor, and punishable by fine or imprisonment, or both. Any one adulterating spirits with any poisonous substance, or substance injurious to health, or any one selling such spirits, knowing them to be adulterated, is deemed guilty of misdemeanor, and punishable by fine or imprisonment or both; the fine in no case to exceed 1,000 dollars, and the imprisonment in no case to exceed four years. The law also provides against the adulteration of oils, against the deceptive packing of hay, and even against frauds in linens and other goods, containing fewer yards of measurement than are marked upon them.

In England the law affords redress to consumers in cases of adulteration by action, if the injury be individual in its character; by indictment, if the injury be general; by summary charge before a magistrate; and by proceedings instituted by the Excise. The process of action or indictment is at once too costly and too cumbrous for general adoption. That by summary charge before a magistrate, as well as that originating with the Excise, applies only to a few special articles which are named in particular Acts, or which are subject to the supervision, for fiscal purposes, of the Board of Inland Revenue; but your Committee are of opinion that it would be most desirable that, in all cases of the sale of an adulterated or fictitious article, a cheap and easy remedy, by summary charge before a magistrate, should be afforded to the person upon whom the fraud had been practised, and they would strongly recommend the propriety of such a change in the present law on this subject as would effect this object.

Your Committee desire specially to call attention to the provisions of the Bread Act, 6 & 7 Will. 4, c. 37. Section 2 provides that bread may be made of wheat flour, barley, rye, oats, buckwheat, Indian corn, peas, beans, rice, or potatoes, with any common salt, pure water, eggs, milk, barm, leaven, potato or other yeast, and with no other ingredients, subject to certain regulations. Any mixture besides those allowed in Section 2 involves a penalty of 10*l.*, or not less than 5*l.*; or, in default, an imprisonment not exceeding six months, with or without hard labour; and, if the magistrate think fit, publicity of the offence by advertisement. Any one mixing with the corn, meal, or flour any ingredient not the genuine produce of the corn or grain; or any one selling, or offering for sale, separately or mixed, any meal or flour of one sort of grain, as the meal or flour of any other sort, or any ingredient mixed with the meal or flour so sold, is liable to a penalty of 20*l.* and not less than 5*l.* All bread made with mixed meal or flour must be marked with a Roman M; the penalty for neglecting this provision being a fine not exceeding 10*s.* for every pound weight of bread not so marked. Magistrates, or peace officers by their warrants, may search premises, and seize any adulterated flour or bread, and search for any forbidden ingredient. The penalty, if ingredients for adulteration are found, is 10*l.* or not less than 40*s.*, for the first offence, 5*l.* for the second, and 10*l.* for every subsequent offence, or in default, six months' imprisonment, with publicity as to the names of offenders. The Act also provides for an appeal to quarter sessions, and declares that no person shall be convicted unless complaint is made within 48 hours after the offence, or within such reasonable time as to the justices may seem fit.

Your Committee have given the provisions of the Bread Act in some detail, because it seems to them to comprise much that may be useful in framing a measure applicable to adulterations generally.

It is impossible to frame any enactment on this subject which shall rely on strict definitions. The object of the law is to strike at fraud, and wherever a fraudulent intention can be proved, there to inflict a penalty. What constitutes fraud must be left to the interpretation of the administrators of the law. Thus mixtures of an innocuous character, made known by the seller, or used for the preservation of the article, cannot be forbidden without danger to the needful freedom of commerce, and ought not to be interpreted as coming within the provisions of a penal law. Nor should those provisions apply wherever the seller can afford satisfactory proof that he has himself been deceived, and was not conscious



of the adulteration practised; unless he have evinced a culpable ignorance of the trade which he professes to follow.

Subject to these qualifications, the law should be clear and positive in forbidding adulteration, and in punishing those who practise it.

Hitherto the progress of legislation has not kept pace with the ingenuity of fraud, which has not scrupled to avail itself of every improvement in chemistry or the arts which could subserve its purpose.

Although, however, the means of adulteration have greatly increased, so also, fortunately, have the facilities for detection, especially by the improved use of the microscope, which has been employed by Dr. Hassall and others with signal success.

At first, no doubt, some difficulty would be experienced in finding persons qualified to conduct the required chemical and microscopical examinations; but the want will soon give rise to the needful supply. This want has been already felt by the Board of Inland Revenue, which has been compelled, for the purposes of the analyses requisite in cases of adulterated articles of Excise, to educate persons for this special duty. In addition to about 4,000 officers, scattered over the country, whose experience enables them to detect many adulterations, and to discover cases of strong suspicion, the Board employs about 60 to 70 analytical chemists, whose numbers are recruited by students, educated for this purpose at University College, to the number of 14 in every year. Mr. Phillips, the chief officer of the chemical department of the Board of Inland Revenue, states that the practice is for the officers, if they suspect a trader of adulterations, or on information given to them, to go and procure samples. Many are competent to examine samples on the spot. If they have any doubt of their own judgment, they send them to the laboratory to be further examined. And he adds, as showing the result of the system adopted by the Board, that adulteration has been totally stopped in some articles, and much diminished in others, from the very fact that traders know they are liable to inspection by the Excise officers.

It has been suggested that the prevention of adulterations in food might be accomplished by an extension of the system of the Board of Inland Revenue; but Your Committee are of opinion that no machinery for this purpose will work satisfactorily unless the agents employed derive their authority from corporate or other local governing bodies.

It will be desirable, therefore, to empower municipal or other local or district authorities to appoint an officer, or officers, who, on complaint made, or in cases of reasonable suspicion, shall procure portions of any article supposed to be adulterated, with a view to their examination or analysis by some duly qualified person appointed for that purpose. On the report of such persons, if it confirm the suspicion of adulteration, a summons shall be issued, and the case be investigated before the justices, who shall have power to inflict summary punishment, by fine or imprisonment, in every case where pecuniary fraud or danger to health shall have been proved. The justices should also be empowered to publish the names of offenders. The advantages of publicity have been urged by many witnesses, and especially by Dr. Hassell and Mr. Wakley, who attribute a recent great diminution in the amount of adulteration to the publication of names and other particulars in the reports of the "Lancet" Commission." It is essential that a right of appeal should lie to the Court of Quarter Sessions.

With regard to coloured confectionery, Your Committee recommend that authority should be given to local Boards of Health, or other governing bodies, to forbid the use, for colouring, of all mineral matter, and all poisonous vegetable matter.

But although Your Committee desire to leave the execution of the law against adulteration in the hands of the local authorities, they are of opinion that very valuable assistance would be afforded to such bodies in ascertaining the fact of adulteration, if one or more scientific analysers were to be appointed under the authority of the General Board of Health, to whom the local authorities might, whenever they thought fit, refer any articles seized under suspicion of adulteration for analysis, and who would thus enable the persons charged with the administration of the law to obtain at once, and without cost, a fully competent opinion in all difficult cases.

These

These analysers should also undertake to examine any articles sent to them by private individuals, on payment of the expenses of such examination.

Your Committee would also suggest that the General Board of Health should from time to time issue such information as to the nature of the adulterations of articles of food, &c., injurious to health, as may be obtained in the progress of scientific research on this subject, and as would serve to guide the local authorities in their endeavours to detect these frauds.

With reference to drugs, Your Committee are of opinion that no inspection at the outports would guarantee to the consumer the purity of commodities passing through the hands of intermediate parties; and the exclusion of impure drugs would operate injuriously, by interfering with the supply obtained by scientific processes, calculated to extract valuable matter even from products seemingly almost worthless.

It has been suggested that chemists and druggists should be allowed to exercise their calling only under license. At present, to use the words of one of the witnesses, Mr. Jacob Bell, a man may be a shoemaker to-day and a chemist and dispenser of drugs to-morrow, though he cannot assume the name of "pharmaceutical chemist." The question of licences, however, may perhaps be properly deferred till it be seen how far the efforts of the Pharmaceutical Society and a more general system of inspection may prove successful. The existing powers of inspection in England are confined to the College of Physicians and the Apothecaries' Company. The powers of the latter are very limited, extending only to apothecaries' shops, and in no way to those of chemists and druggists. The College of Physicians has authority to inspect both one and the other; but this authority is confined to the limits of the city of London, where inspection takes place three times a year. The inspection, however, seems to be too cursory to be of any great utility.

It has been shown that much good has arisen from the establishment of the Pharmaceutical Society, the members of which being specially educated in the knowledge of drugs, are better able than heretofore to make proper selections and to detect adulterations. Several witnesses, too, have borne testimony to the great advantage which would ensue if poor-law guardians and managers of hospitals and other similar institutions would, instead of accepting, as they too often do, the lowest tender for drugs, and, indeed, for articles of food also, cause them to be properly inspected, and, if needful, analysed before admitting them into use.

Though not coming strictly within the scope of the inquiry entrusted to them, Your Committee cannot forbear calling attention to the evidence concerning patent medicines, the sale of poisons, and the state of the pharmacopœias of the three kingdoms.

With regard to patent medicines, there can be no doubt that the public health is endangered by the use of several of these compounds; and Your Committee are of opinion that the stamp duty, by giving them a seeming Government sanction, has an injurious influence in encouraging their sale and consumption, and should be abandoned, whenever this can be done with a due regard to the wants of the public revenue.

The unrestricted sale of poisons is a matter of pressing importance, and deserves the early attention of the Legislature. At the present moment, the most violent poisons may be universally sold, without any restriction except such as is afforded by the sense of moral responsibility on the part of the dealer. It is needless to point out the serious consequences which frequently ensue from this unrestrained freedom. To take a familiar instance, it is stated in evidence that the essential oil of bitter almonds, and what is called "almond flavour," of very various strength, and containing highly dangerous elements, are openly and commonly sold for culinary purposes, and in the hands of servants wholly ignorant of their properties, used in quantities often dangerous and sometimes fatal. It is well worthy of consideration, whether the sale of poisons should not be forbidden, unless under the authority of a medical prescription, or under such conditions, as to witnesses, and formal entries of the names and addresses of purchasers, as may secure the needful amount of caution.

The evil arising from the existence of three distinct and, in some important instances, widely differing Pharmacopœias for the three kingdoms, is one too

evident to need enforcement. The result is, that many of the prescriptions of one country are not only inefficacious, but often absolutely dangerous, if made up in either of the others. One of the witnesses states, that an Edinburgh prescription containing a solution of morphia, made up in London, would involve the patient's taking twice the quantity intended. On the other hand, a patient taking prussic acid under an Edinburgh prescription, made up in London, would be taking only half the quantity intended; the Edinburgh prussic acid being twice the strength of the prussic acid of the London Pharmacopœia. This is an evil which can be remedied only by the combined efforts of the medical authorities of England, Ireland, and Scotland, to whom the subject should, without delay, be referred.

22 July 1856.

## PROCEEDINGS OF THE COMMITTEE.

*Veneris, 22<sup>o</sup> die Februarii, 1856.*

### MEMBERS PRESENT:

Mr. Scholefield.  
Mr. Moffatt.  
Mr. Peacocke.  
Lord Claud Hamilton.

Mr. Kinnaird.  
Mr. Cowper.  
Mr. Gregson.  
Mr. Swift.

Mr. SCHOLEFIELD is called to the Chair.

The Committee considered the course of proceedings.

[Adjourned till Wednesday next, at half-past Twelve o'clock.]

*Mercurii, 27<sup>o</sup> die Februarii, 1856.*

### MEMBERS PRESENT:

Mr. SCHOLEFIELD in the Chair.

Lord Claud Hamilton.  
Mr. Peacocke.  
Mr. Swift.  
Mr. Wise.  
Mr. Moffatt.  
Viscount Goderich.  
Mr. Alderman Cubitt.

Mr. Kinnaird.  
Mr. Gregson.  
Mr. Villiers.  
Mr. Sheridan.  
Mr. Otway.  
Mr. Cowper.

The Committee examined Professor *Alfred Taylor* and Mr. *James Abbis*.

[Adjourned till Friday next, at half-past Twelve o'clock.]

*Veneris, 29<sup>o</sup> die Februarii, 1856.*

### MEMBERS PRESENT:

Mr. SCHOLEFIELD in the Chair.

Mr. Moffatt.  
Viscount Goderich.  
Mr. Alderman Cubitt.  
Mr. Ayshford Wise.  
Mr. Peacocke.

Lord Claud Hamilton.  
Mr. Sheridan.  
Mr. Kinnaird.  
Mr. Knight.  
Mr. Cowper.

The Committee examined Mr. *Waller Lewis*, Professor *John Quekett*, and Mr. *Lewis Thompson*.

[Adjourned till Wednesday next, at half-past Twelve o'clock.]

*Mercurii, 5<sup>o</sup> die Martii, 1856.*

## MEMBERS PRESENT:

Mr. SCHOLEFIELD in the Chair.

Viscount Goderich.  
Mr. Moffatt.  
Mr. Sheridan.  
Mr. Kinnaird.  
Mr. Ayshford Wise.

Mr. Otway.  
Mr. Peacocke.  
Mr. Cowper.  
Mr. Gregson.  
Viscount Ebrington.

The Committee examined Mr. *Lyndsay Blyth*, Mr. *William Bastick*, and Mr. *James Baiss*.

[Adjourned till Friday next, at half-past Twelve o'clock.]

*Veneris, 7<sup>o</sup> die Martii, 1856.*

## MEMBERS PRESENT:

Mr. SCHOLEFIELD in the Chair.

Viscount Goderich.  
Mr. Moffatt.  
Mr. Sheridan.  
Mr. Peacocke.  
Mr. Ayshford Wise.

Mr. Villiers.  
Mr. Gregson.  
Mr. Cowper.  
Mr. Kinnaird.

The Committee examined Mr. *William Emerson*, Mr. *Edward Farrand*, Dr. *Challice*, Mr. *Rufus Usher*, and Mr. *Richard Grey*.

[Adjourned till Wednesday next, at half-past Twelve o'clock.]

*Mercurii, 12<sup>o</sup> die Martii, 1856.*

## MEMBERS PRESENT:

Mr. SCHOLEFIELD in the Chair.

Mr. Ayshford Wise.  
Mr. Moffatt.  
Viscount Goderich.  
Mr. Cowper.  
Mr. Kinnaird.

Viscount Ebrington.  
Mr. Peacocke.  
Mr. Villiers.  
Mr. Swift.  
Mr. Gregson.

The Committee examined Dr. *Neghigan*, Mr. *Philip Ripley*, Mr. *William Weston*, Mr. *Richard Locock*, Mr. *Frederick Calvert*, and Mr. *Reginald Richardson*.

[Adjourned till Wednesday, the 2d of April, at half-past Twelve o'clock.]

*Mercurii, 2<sup>o</sup> die Aprilis, 1856.*

## MEMBERS PRESENT:

Mr. SCHOLEFIELD in the Chair.

Mr. Moffatt.  
Viscount Goderich.  
Mr. Kinnaird.  
Mr. Ayshford Wise.  
Mr. Peacocke.  
Mr. Knight.

Mr. Alderman Cubitt.  
Viscount Ebrington.  
Mr. Swift.  
Mr. Gregson.  
Mr. Otway.

The Committee examined Mr. *Thomas Wakley*.

Viscount GODERICH, in the absence of Mr. SCHOLEFIELD, is called to the Chair.

The Committee examined Mr. *Jacob Bell*, and Dr. *Carpenter*.

[Adjourned till Friday next, at Half-past Twelve o'clock.]

*Veneris,*

*Veneris, 4<sup>o</sup> die Aprilis, 1856.*

## MEMBERS PRESENT:

Viscount Goderich.  
Mr. Ayshford Wise.  
Mr. Villiers.  
Mr. Alderman Cubitt.  
Mr. Moffatt.  
Mr. Otway.

Mr. Cowper.  
Viscount Ebrington.  
Mr. Kinnaird.  
Mr. Peacocke.  
Mr. Gregson.

Viscount GODERICH, in the absence of Mr. SCHOLEFIELD, is called to the Chair.

The Committee examined Mr. *John Woodin* and Mr. *William Atkinson*.

[Adjourned till Wednesday next, at half-past Twelve o'clock.]

*Mercurii, 9<sup>o</sup> die Aprilis, 1856.*

## MEMBERS PRESENT:

Mr. SCHOLEFIELD in the Chair.

Viscount Goderich.  
Mr. Ayshford Wise.  
Lord Claud Hamilton.  
Mr. Moffatt.

Mr. Swift.  
Mr. Kinnaird.  
Mr. Peacocke.  
Mr. Gregson.

The Committee re-examined Mr. *James Drew*, Mr. *Divett*, a Member of the House, Mr. *Julian Rodgers*, Mr. *Edwin Wickham*, and Mr. *Ayshford Wise*, a Member of the House.

[Adjourned till Wednesday next, at half-past Twelve o'clock.]

*Mercurii, 16 die Aprilis, 1856.*

## MEMBERS PRESENT:

Lord Claud Hamilton.  
Mr. Moffatt.  
Mr. Peacocke.  
Mr. Ayshford Wise.

Mr. Otway.  
Mr. Swift.  
Mr. Kinnaird.

Lord CLAUD HAMILTON, in the absence of Mr. SCHOLEFIELD, is called to the Chair.

The Committee examined Mr. *Potto Brown*, Mr. *Thomas Callard*, Mr. *Alexander Robertson*, and Mr. *Alexander Clapperton*.

[Adjourned till Friday, the 25th instant, at half-past Twelve o'clock.]

*Veneris, 25<sup>o</sup> die Aprilis, 1856.*

## MEMBERS PRESENT:

Mr. SCHOLEFIELD in the Chair.

Mr. Peacocke.  
Mr. Kinnaird.  
Viscount Goderich.  
Lord Claud Hamilton.

Viscount Ebrington.  
Mr. Moffatt.  
Mr. Gregson.  
Mr. Sheridan.

The Committee examined Mr. *John Jackson*, Mr. *Emile Richter*, and Mr. *Stafford Allen*.

[Adjourned till Wednesday next, at half-past Twelve o'clock.]

*Mercurii, 30<sup>o</sup> die Aprilis, 1856.*

## MEMBERS PRESENT:

Mr. SCHOLEFIELD in the Chair.

Viscount Ebrington.  
Mr. Peacocke.  
Mr. Alderman Cubitt.  
Mr. Ayshford Wise.  
Mr. Sheridan.  
Viscount Goderich.

Mr. Otway.  
Lord Claud Hamilton.  
Mr. Kinnaid.  
Mr. Gregson.  
Mr. Moffatt.

The Committee examined Mr. Samuel Goodman, Mr. Peter Mackenzie, Dr. Charles Bingley, and Mr. John Postgate.

[Adjourned till Friday next, at half-past Twelve o'clock.

*Veneris, 2<sup>o</sup> die Maii, 1856.*

## MEMBERS PRESENT:

Mr. SCHOLEFIELD in the Chair.

Viscount Ebrington.  
Mr. Ayshford Wise.  
Mr. Moffatt.  
Mr. Kinnaid.

Mr. Alderman Cubitt.  
Mr. Gregson.  
Mr. Cowper.  
Mr. Knight.

The Committee examined Mr. Arthur Hassall, and Mr. George Moffatt, a Member of the House.

[Adjourned.

*Veneris, 11<sup>o</sup> die Julii, 1856.*

## MEMBERS PRESENT:

Mr. SCHOLEFIELD in the Chair.

Mr. Swift.  
Mr. Moffatt.  
Mr. Cowper.  
Mr. Alderman Cubitt.  
Mr. Sheridan.

Mr. Peacocke.  
Mr. Kinnaid.  
Viscount Goderich.  
Mr. Knight.

Draft Report proposed by the Chairman, read 1<sup>o</sup>, as follows:

"YOUR Committee have inquired into the subject referred to them, and in the course of their investigation have examined a great number of witnesses, comprising men of high scientific attainments, as well as those whose practical knowledge as dealers seemed to point them out as persons likely to give useful information.

"Among the scientific witnesses examined, were; Dr. Hassall, well known by his able investigations of the subject of adulterations of food; Mr. Warrington, chemical operator to the Apothecaries' Company; Dr. Normandy; Mr. Simon and Dr. Letheby, the late and present officers of health in the city of London; Dr. Thompson, professor of chemistry at St. Thomas's Hospital; Mr. Redwood, professor of chemistry to the Pharmaceutical Society; Mr. Simmonds, author of a work on the commercial products of the vegetable kingdom; Mr. Postgate, a surgeon, and chemical lecturer in Birmingham; Mr. Phillips, chief officer of the chemical department of the Inland Board of Revenue; Dr. Taylor, professor of medical jurisprudence, at Guy's Hospital; Dr. Waller Lewis, medical officer to the General Post-office; Mr. Quekett, professor in the Royal College of Surgeons; Mr. Thompson, an analytical chemist; Mr. Blyth, lecturer on natural philosophy at St. Mary's Hospital; Dr. Challice; Mr. Wakley, coroner for Middlesex; Mr. Jacob Bell; Dr. Carpenter, of University College; Dr. Moore Neligan, of Dublin; Dr. Richter; and Dr. Bingley, professor at the Medical Institute of Sheffield.

"Though the witnesses differed both as to the extent to which adulteration is carried on and as to its nature and effects, your Committee cannot avoid the conclusion that adulteration widely prevails, though under circumstances of very various character. As regards foreign

foreign products, some arrive in this country in an adulterated condition, while others are adulterated by the English dealer. Other commodities, again, the produce of this country, are shown to be in an adulterated state when passing into the hands of the dealers, while others undergo adulteration by the dealers themselves.

"Not only is the public health thus exposed to danger, and pecuniary fraud committed on the whole community, but the public morality is tainted, and the high commercial character of this country seriously lowered both at home and in the eyes of foreign countries. Though, happily, the majority refuse, under every temptation, to falsify the quality of their wares, there are, unfortunately, too many who, though reluctantly practising deception, yield to the pernicious contagion of example, or to the hard pressure of competition, forced upon them by their less scrupulous neighbours.

"Without entering into voluminous details of the evidence taken, your Committee would enumerate the leading articles which have been proved to be more or less commonly adulterated; these are, arrowroot, adulterated with potato and other starches; bread, with potatoes, plaster of Paris, alum, and sulphate of copper; bottled fruits and vegetables, with certain salts of copper; coffee, with chicory, roasted wheat, beans, and mangel-worzel; chicory, with roasted wheat, carrots, sawdust, and Venetian red; cocoa, with arrowroot, potato-flour, sugar, chicory, and some ferruginous red earths; cayenne, with ground rice, mustard husk, &c., coloured with red lead, Venetian red, and turmeric; gin with water, grains of Paradise, sulphuric acid, and cayenne; lard, with potato-flour, mutton suet, alum, carbonate of soda, and caustic lime; mustard, with wheat-flour and turmeric; marmalade, with apples or turnips; oatmeal, with barley-flour; porter and stout (though sent out in a pure state from the brewers), with water, sugar, treacle, salt, alum, cocculus Indicus, grains of Paradise, nux vomica, and sulphuric acid; pickles and preserves, with salts of copper; snuff, with various chromates, red lead, lime, and powdered glass; tobacco, with water, sugar, rhubarb, and treacle; vinegar, with water, sugar, and sulphuric acid; jalap, with powdered wood; opium, with poppy capsules, wheat-flour, powdered wood, and sand; scammony, with wheat-flour, chalk, resins, and sand; coloured confectionery, with plaster of Paris and other similar ingredients, coloured with various pigments of a highly poisonous nature; and acid drops, purporting to be compounded of Jargonelle pear, Ribstone pippin, lemen, &c., with essential oils containing prussic acid or other dangerous ingredients.

"The adulteration of drugs is extensively practised, and when it is borne in mind how frequently life itself depends upon the efficacy of the medicines prescribed, it is difficult to exaggerate the evils arising from this prevalent fraud.

"It has been shown that much good has arisen from the establishment of the Pharmaceutical Society, the members of which being specially educated in the knowledge of drugs, are better able than heretofore to make proper selections and to detect adulterations. Several witnesses, too, have borne testimony to the great advantage which would ensue if poor-law guardians and managers of hospitals and other similar institutions would, instead of accepting, as they too often do, the lowest tender for drugs, and, indeed, for articles of food also, would cause them to be properly inspected, and, if needful, analysed, before admitting them into use.

"The adulteration of drinks deserves also special notice, because your Committee cannot but conclude that much of the drunkenness so deplorably prevalent is less due to the natural properties of the drinks themselves, than to the admixture of narcotics and other noxious substances intended to supply the properties lost by dilution.

"Though adulterations prevail more or less in all districts, it may be assumed, as a rule, that the poorer the district, the greater is the amount of adulteration. Nor have the poor the same power to protect themselves against such frauds as their richer neighbours; they are necessarily limited to such means of purchase as are afforded by the immediate locality in which they reside, and are, moreover, too often bound to one dealer by the facilities of credit which he affords them.

"These adulterations may be classified under three heads, those of which the object is to lower the price of the article adulterated, by the admixture of substances of a cheaper kind; those which are intended to improve the appearance of the adulterated article, and thus in many cases to deceive the public as to its quality; and those which are practised for the purpose of simulating some property injured or destroyed in the process of adulteration.

"Adulterations in each of these classes are of two kinds; those in which are employed substances of an innocuous character, and those in which the mixtures are more or less injurious to health, either directly by the noxious properties of the ingredients, or indirectly by lowering the nutritive qualities of the article adulterated.

"In dealing with these various adulterations, it is necessary to distinguish between the pecuniary fraud practised on the public, and the injury to public health. If, as regards the adulteration of articles with substances of a cheaper and innocuous character, the public derive the full benefit of this cheapness in a lower price, it would be difficult, if not unwise, for the Legislature to interfere, unless it could do so by requiring that every such article be sold as a mixture, as distinguished from the article in its pure state. This the law already requires as to the article of coffee, and also as to the article of bread, which, unless



made of wheat flour alone, must be distinctly marked with the letter M. But, whenever an article is so adulterated as to involve pecuniary fraud or injury to health, it appears to your Committee to be the duty of the Legislature to provide some efficient remedy.

"It has been objected that the best course will be to leave the buyer to take care of himself. But there are many adulterations which it is impossible for the buyer to detect. Already the law takes note of frauds in weights and measures, of injuries to the public health by the sale of unwholesome animal food, and indeed of many adulterations, though, excepting as to bread and flour, only with a view to fiscal considerations, and not to those of a moral or sanitary character.

"It is said, too, that there are many frauds which legislation cannot reach or punish. But, on the other hand, it would be difficult to tell the numberless frauds which legislation may prevent.

"The great difficulty of legislation on this subject lies in putting an end to the liberty of fraud without affecting the freedom of commerce, in punishing the exceptional wrong without interfering with the general right dealing.

"With a view to form an opinion as to the best remedy for this growing evil, your Committee have obtained evidence as to the law on adulterations in other countries, and especially in France, Belgium, Germany, and the United States. In this object your Committee have been materially assisted by returns procured through the kindness of Lord Clarendon from some of our Ministers at foreign Courts.

"As to the present state of the law in this country, your Committee received much valuable information from Mr. S. R. Goodman, the legal adviser to the Justices of the City of London.

"The following is a brief statement of the laws of different countries on the subject of adulterations. In France, a law, bearing date the 27th March 1851, confirmed and extended the penal code to all adulterations in 'alimentary and medicinal substances.' To this law was added one of the 5th May 1855, applicable to the adulteration of drinks. The law of March 1851 was founded upon two elaborate and able Reports of a Commission of Inquiry, bearing date the 24th January and 25th February 1851. The law of May 1855 was preceded by a like Report, made the 29th March 1855.

"The provisions of these laws apply: 1st. To those who shall adulterate any alimentary or medicinal substances intended for sale:

"2d. To those who shall sell or expose for sale such substances, knowing them to be adulterated.

"If the article adulterated contains substances injurious to health, the fine ranges from 50 to 500 francs, with imprisonment from three months to two years; these punishments being applicable even in cases where the adulteration is known to the buyer or consumer.

"A penalty of 16 to 25 francs, and imprisonment from six to ten days, or one of these modes of punishment, according to circumstances, is imposed on those who, 'without legitimate cause,' shall have in their shops or warehouses any such adulterated articles. If the adulterated article be injurious to health, the fine may be increased to 50 francs, and the imprisonment to 15 days.

"The fine and imprisonment may be doubled if a delinquent has been previously convicted within five years of his last offence.

"The adulterated articles shall be confiscated, and if injurious to health, destroyed.

"The authorities may make public announcement of the particulars of the offence by placard and advertisement.

"A special 'Ordonnance de Police,' in Paris, applies to the manufacture and sale of confectionery, and forbids the use, for colouring, of all mineral matter, and all poisonous vegetable matter. Confectioners are required to envelope coloured confectionery in paper marked with their name and address, and are made personally responsible for accidents arising from the consumption of the articles they sell. Confectioners' shops are to be visited, for the purpose of seeing that they conform to these regulations. As an additional precaution, the "Conseil de Salubrité" of the city of Paris, a body consisting of eminent physicians, chemists, and other persons, publishes a list of colouring matters which may be employed by confectioners, with instructions as to the manner of mixing them, and a list of the colouring matters, the use of which is expressly forbidden.

"In Belgium, a law, bearing date the 17th March 1856, declares that all who shall have adulterated or cause to be adulterated any articles of food or drink intended for sale, shall be liable to an imprisonment of eight days to one year, and a fine of 50 to 1,000 francs, or to either punishment alone.

"The penalties are divided into two classes. The first applies to persons who have adulterated, or caused to be adulterated, eatables, drinkable liquors, or any articles of food intended to be offered for sale, the penalty being, as already stated, from eight days to a year's

year's imprisonment, and a fine of from 50 to 1,000 francs. In the same class are included persons who shall knowingly sell, or expose for sale, adulterated articles, or shall have given instructions calculated to facilitate or lead to such adulteration.

"The second class comprises persons who unintentionally sell, or expose for sale, adulterated food, and who are liable only to simple police punishments.

"The mere fact of knowingly keeping adulterated articles of food intended for sale, renders the persons so offending liable to an imprisonment from a week to a year, and to a fine of from 26 to 500 francs. When the punishment reaches to six months' imprisonment the court can withdraw the 'patente' (license to trade) from the offender during the whole period of his incarceration, which is equivalent to preventing him from carrying on his business. A copy of the conviction is to be posted up at the door of the person condemned, or inserted in such journals as the court may determine, at the expense of the culprit. All adulterated articles of food in the possession of the delinquent are confiscated.

"In Prussia, the municipal law enacts that 'no person shall knowingly sell or communicate to other persons for their use articles of food or drink which possess properties prejudicial to health, under a penalty of fine or bodily punishment.' Those who are found guilty of knowingly selling victuals which are damaged or spoiled, or mixed with deleterious additions, may be held incapable of carrying on the same branch of business. Whosoever mixes articles of food with foreign materials for the purpose of increasing their weight or bulk, or of deceiving purchasers as to their quality, is liable to be proceeded against for fraud.

"In Hamburg, adulterations of food are the subject of police regulations, involving fine and imprisonment.

"In Lubeck, such adulterations are treated as acts of fraud, and dealt with by police authority. The grinding of blighted corn with good corn is prohibited.

"In Holland, by a law of the 22d May 1829, any person adulterating bread or flour, or any article of food or drink, with any poisonous matter, is liable to an imprisonment of from two to five years, and a fine of from two hundred to five hundred florins, and to the revocation of his 'patente' during his imprisonment. The same penalties apply to those who supply the forbidden ingredient, knowing the purpose for which it is used. A less severe punishment is inflicted on those who adulterate articles of food or drink with ingredients injurious to health, as well as on those who offer them for sale. To the other penalties are added the publication of the names of the offenders, and the confiscation of the adulterated goods.

"In the United States special laws have been passed 'to prevent the importation of adulterated and spurious drugs and medicines.' By these it is enacted that all drugs and medicines shall, before passing the custom-house, being examined and appraised, as well in reference to their quality and purity as to their value. All medicinal preparations are to have the name of the manufacturer affixed to each parcel. Adulterated or deteriorated drugs and medicines are not allowed to pass the custom-house; but the owner or consignee has the right of calling for a re-examination, or further analysis, if dissatisfied with the examiner's return. The Secretary of the Treasury is to appoint suitably qualified persons at each of the ports of New York, Boston, Philadelphia, Baltimore, Charlestown, and New Orleans, as special examiners of drugs and medicines. A Treasury Minute prescribes the manner of carrying out the Act, and gives a list of the principal articles, with the result of special tests agreeing with the standards referred to in the law; and all articles are entitled to entry when ascertained by analysis to conform to those standards. Patent or secret medicines are subject to the said examination, and disposition after examination, as other medical preparations, and are not permitted to pass the custom-house unless the examiner be satisfied that they are fit and safe to be used for medicinal purposes.

"In the State of New York, the law expressly forbids adulterations of flour, hops, and spirits. Any one knowingly offering for sale flour mixed with Indian meal, or with any other mixture, or with unsound flour, is liable to a penalty of five dollars for every cask. Any one mixing with hops any foreign or improper substances, or in any manner adulterating their quality, is deemed guilty of misdemeanor, and punishable by fine or imprisonment, or both. Any one adulterating spirits with any poisonous substance, or substance injurious to health, or any one selling such spirits, knowing them to be adulterated, is deemed guilty of misdemeanor, and punishable by fine or imprisonment, or both; the fine in no case to exceed 1,000 dollars, and the imprisonment in no case to exceed four years. The law also provides against the adulteration of oils, against the deceptive packing of hay, and even against frauds in linens and other goods, containing fewer yards of measurement than are marked upon them. In Spain the law, besides authorising the inspection of drugs at the custom-house, permits the dispensing of drugs only by apothecaries legally appointed, and absolutely forbids the sale of secret medicines.

"In England the law affords redress to consumers in cases of adulteration, by action if the injury be individual in its character, by indictment if the injury be general, by summary charge before a magistrate, and by proceedings instituted by the Excise. The process of action or indictment is at once too costly and too cumbrous for general adoption. That by summary charge before a magistrate, as well as that originating with the Excise, applies



applies only to a few special articles which are named in particular Acts, or which are subject to the supervision, for fiscal purposes, of the Board of Inland Revenue. Your Committee, however, desire specially to call attention to the provisions of the Bread Act, 6 & 7 Will. 4, c. 37. Section 2 provides that bread may be made of wheat flour, barley, rye, oats, buckwheat, Indian corn, peas, beans, rice, or potatoes, with any common salt, pure water, eggs, milk, barm, leaven, potato or other yeast, and with no other ingredients, subject to certain regulations. Any mixture besides those allowed in section 2 involves a penalty of 10 *l.*, or not less than 5 *l.*; or, in default, an imprisonment not exceeding six months, with or without hard labour; and, if the magistrate think fit, publicity of the offence by advertisement. Any one mixing with the corn, meal, or flour any ingredient not the genuine produce of the corn or grain; or any one selling, or offering for sale, separately or mixed, any meal or flour of one sort of grain, as the meal or flour of any other sort, or any ingredient mixed with the meal or flour so sold, is liable to a penalty of 20 *l.* and not less than 5 *l.* All bread made with mixed meal or flour must be marked with a Roman M; the penalty for neglecting this provision being a fine not exceeding 10 *s.* for every pound weight of bread not so marked. Magistrates, or peace officers by their warrants, may search premises, and seize any adulterated flour or bread, and search for any forbidden ingredient. The penalty, if ingredients for adulteration are found, is 10 *l.*, or not less than 40 *s.*, for the first offence, 5 *l.* for the second, and 10 *l.* for every subsequent offence, or in default, six months' imprisonment, with publicity as to the names of offenders. The Act also provides for an appeal to quarter sessions, and declares that no person shall be convicted unless complaint is made within 48 hours after the offence, or within such reasonable time as to the justices may seem fit.

"Your Committee have given the provisions of the Bread Act in some detail, because it seems to them to comprise much that may be useful in framing a measure applicable to adulterations generally.

"It is impossible to frame any enactment on this subject which shall rely on strict definitions. The object of the law is to strike at fraud; and wherever a fraudulent intention can be proved, then to inflict a penalty. What constitutes fraud must be left to the interpretation of the administrators of the law. Thus mixtures of an innocuous character, made known by the seller, or used for the preservation of the article, cannot be forbidden without danger to the needful freedom of commerce, and ought not to be interpreted as coming within the provisions of the law. Nor should those provisions apply wherever the seller can afford satisfactory proof that he has himself been deceived, and was not conscious of the adulteration practised; unless he have evinced a culpable ignorance of the trade which he professes to follow.

"Subject to these qualifications the law should be clear and positive in forbidding adulteration, and in punishing those who practise it. Since it is indisputably wrong to offer a counterfeit silver coin for a pound of good coffee, it should be made equally culpable to offer a pound of counterfeit coffee for a good silver coin.

"Hitherto the progress of legislation has not kept pace with the ingenuity of fraud, which has not scrupled to avail itself of every improvement in chemistry or the arts which could subserve its purpose.

"Although, however, the means of adulteration have greatly increased, so also, fortunately, have the facilities for detection, especially by the improved use of the microscope, which has been employed by Dr. Hassall and others with signal success.

"At first, no doubt, some difficulty would be experienced in finding persons qualified to conduct the required chemical and microscopical examinations; but the want will soon give rise to the needful supply. This want has been already felt by the Board of Inland Revenue, which has been compelled, for the purposes of the analyses requisite in cases of adulterated articles of Excise, to educate persons for this special duty. In addition to about 4,000 officers, scattered over the country, whose experience enables them to detect many adulterations, and to discover cases of strong suspicion, the Board employs about 60 to 70 analytical chemists, whose numbers are recruited by students, educated for this purpose at University College, to the number of 14 in every year. Mr. Phillips, the chief officer of the chemical department of the Board of Inland Revenue, states that the practice is for the officers, if they suspect a trader of adulterations, or on information given to them, to go and procure samples. Many are competent to examine samples on the spot. If they have any doubt of their own judgment, they send them to the laboratory to be further examined. And he adds, as showing the result of the system adopted by the Board, that adulteration has been totally stopped in some articles, and much diminished in others, from the very fact that traders know they are liable to inspection by the Excise officers.

"It has been suggested that the prevention of adulterations in food might be accomplished by an extension of the Board of Inland Revenue; but your Committee are of opinion that no machinery for this purpose will work satisfactorily unless the agents employed derive their authority from corporate or other local governing bodies.

"It will be desirable, therefore, to empower municipal or other local or district authorities to appoint an officer or officers, who, on complaint made, or in cases made of reasonable suspicion, shall procure portions of any article supposed to be adulterated, with a view to their

their examination or analysis by some duly qualified person acting as public analyser. On the report of such public analyser, if it confirm the suspicion of adulteration, a summons shall be issued and the case be investigated before the justices, who shall have power to inflict summary punishment, by fine or imprisonment, in every case where pecuniary fraud or injury to health shall have been proved. The justices also shall be empowered to publish the names of offenders. The advantages of publicity have been urged by many witnesses, and especially by Dr. Hassall and Mr. Wakley, who attribute a recent great diminution in the amount of adulteration to the publication of names and other particulars in the reports of the 'Lancet commission.' It is essential that a right of appeal should lie to the Court of Quarter Sessions.

"With regard to coloured confectionery, authority should be given to Boards of Health, or other governing bodies, to forbid the use, for colouring, of all mineral matter, and all poisonous vegetable matter.

"With reference to drugs, your Committee are of opinion that no inspection at the out-ports would guarantee to the consumer the purity of commodities passing through the hands of intermediate parties, and the exclusion of impure drugs would operate injuriously, by interfering with the supply obtained by scientific processes, calculated to extract valuable matter even from products seemingly almost worthless.

"It has been suggested that chemists and druggists should be allowed to exercise their calling only under license. At present, to use the words of one of the witnesses, Mr. Jacob Bell, a man may be a shoemaker to-day and a chemist and dispenser of drugs to-morrow, though he cannot assume the name of 'pharmaceutical chemist.' The question of licenses, however, may perhaps be properly deferred till it be seen how far the efforts of the Pharmaceutical Society, and a more general system of inspection may prove successful. The existing powers of inspection are confined to the College of Physicians and the Apothecaries' Company. The powers of the latter are very limited, extending only to apothecaries' shops, and in no way to those of chemists and druggists. The College of Physicians has authority to inspect both one and the other; but this authority is confined to the limits of the city of London, where inspection takes place three times a year; the inspection, however, seems too cursory to be of any great utility.

"Though not coming strictly within the scope of the inquiry entrusted to them, your Committee cannot forbear calling attention to the evidence concerning patent medicines, the sale of poisons, and the state of the Pharmacopœias of the three kingdoms.

"With regard to patent medicines, there can be no doubt that the public health is greatly endangered by the unrestricted sale of compounds, many of which are in a high degree injurious. Whether it would be advisable to compel, as is done in France, all compounders of such medicines to communicate confidentially to a Board, to be appointed for the purpose, particulars of the materials of which the medicines are composed, is a question for grave deliberation; but your Committee are of opinion that the stamp-duty, by giving a seeming Government sanction to patent medicines, has an injurious influence in encouraging their sale and consumption, and might well be abandoned, whenever this can be done with a due regard to the wants of the public revenue.

"The unrestricted sale of poisons is a matter of pressing importance, and deserves the early attention of the Legislature. At the present moment, the most violent poisons may be universally sold, without any restriction except such as is afforded by the sense of moral responsibility on the part of the dealer; and it is needless to point out the serious consequences which may and do ensue from this unrestrained freedom. To take a familiar instance, it is stated in evidence that the essential oil of bitter almonds, and what is called 'almond flavour,' of very various strength, and containing highly dangerous elements, are openly and commonly sold for culinary purposes, and, in the hands of servants wholly ignorant of their properties, used in quantities often dangerous and sometimes fatal. It is well worthy of consideration, whether the sale of poisons should not be forbidden, unless under the authority of a medical prescription, or under such conditions, as to witnesses, and formal entries of names and addresses of purchasers, as may secure the needful amount of caution.

"The evil arising from the existence of three distinct and, in some important instances, widely differing Pharmacopœias for the three kingdoms, is one too evident to need enforcement. The result is, that many of the prescriptions of one country are not only inefficacious, but often absolutely dangerous, if made up in either of the others. One of the witnesses states, that an Edinburgh prescription containing a solution of morphia, made up in London, would involve the patient's taking twice the quantity intended. On the other hand, a patient taking prussic acid under an Edinburgh prescription, made up in London, will be taking only half the quantity intended; the Edinburgh prussic acid being twice the strength of the prussic acid of the London Pharmacopœia. This is an evil which can be remedied only by the combined efforts of the medical authorities of England, Ireland, and Scotland, to whom the subject should, without delay, be referred."

Draft Report proposed by Mr. Moffatt read 1<sup>o</sup>, as follows:

"Your Committee have to report that, during the two Sessions in which they have sat for the purpose of taking evidence on the subject referred to them, 57 witnesses have been examined,

examined, comprising upwards of 30 physicians, surgeons, analytical chemists and druggists, many of whom are distinguished for their researches upon the question of adulteration in the various articles forming the subject of this inquiry. The other witnesses included gentlemen holding high office in the fiscal and sanitary departments of the State, brokers, dealers in tea and groceries, millers and bakers, persons acquainted with the vending of beer, pickles, and other articles of general consumption, as at present supplied to the public.

"Your Committee are of opinion that the various and interesting evidence that has been produced cannot fail to be useful in informing the public mind in regard to the various alterations and mixtures which appear to obtain in many important articles of general consumption; while the evidence produced tends to establish the fact of a number of these articles being more or less mixed with foreign ingredients, it also establishes the fact that these foreign ingredients are generally not prejudicial to health, and are mainly used either to improve the appearance or the quality of the article, and thus to enable the vendor to obtain a higher price; or otherwise, as in the mixture of chicory with coffee, to enable him to supply to the public a satisfactory commodity at less price than that at which the unmixed article could be rendered.

"A brief analysis of the leading points of the evidence received in regard to some of the principal articles of food and drink, will tend to demonstrate the universality of the practice above referred to, the conflicting character of the evidence in regard to the effect of these adulterations, and the impracticability, in most instances, of attempting any further interference by legislative enactment.

#### "BREAD.

"Bread and flour, according to the evidence of a physician who came forward to prove the case of general adulteration, appear to be largely mixed with alum; as of 24 samples of bread, all contained alum, but no other substance except wheat flour; and this was also the case upon a second analysis of 25 samples, including three sold by a company.

"Another doctor of medicine also testified to the same effect, that 'alum seems to be almost the exclusive adulteration of bread and flour,' and that he 'never found a sample of bread without alum;' that in one case plaster of Paris was discovered in some flour, and the person who ground it was fined 100 l. by a magistrate. The Health Officer of the City of London states his belief that alum is universally used in bread. A celebrated analytical chemist, and author of a work on the "Adulteration of Food," stated that he had found nothing positively deleterious in bread except alum. The Professor of Chemistry at St. Thomas's Hospital stated that the principal adulteration of flour within his knowledge was the admixture of inferior flour with the better sorts, and that he had found alum in bread, but did not believe it was mixed in injurious quantities. This opinion was also expressed by the chief officer of the chemical department of the Board of Inland Revenue; while an active promoter of this inquiry only referred to alum as being generally used in the adulteration of bread, so far as his own experience was concerned, and stated that 'a baking company established at Birmingham to supply the public with genuine bread, met with very great opposition from the public on account of the colour of their bread; having to explain to the people that bread was not naturally of a white appearance, but of a yellowish colour; and they had considerable difficulties in establishing their business.'

"It further appears, from the evidence of the Professor of Medical Jurisprudence and Chemistry at Guy's Hospital, that of many samples of best bread examined, there was only one which contained any trace of alum, or of anything except salt and phosphate of lime, with a little carbonate of lime; in an examination of bread once or twice a year for the last 10 or 12 years, he has found no alum; this bread being that which is chiefly sold at the west end of London.

"From the examination of an analytical chemist, who is a licentiate of the Apothecaries' Company, and also a Member of the College of Surgeons, it appears that he discovered the constituent of alum in 78 samples of bread purchased within the previous eight months, and he therefore assumed that alum had been mixed with the bread, although he was unable to find it; neither does he consider the finding of its constituent parts any proof that alum had been mixed in the bread, inasmuch as they might have been put in separately, and would not then form alum.

"Another eminent analytical and consulting chemist and druggist stated that bread is almost constantly adulterated with alum.

"A physician residing in Bermondsey stated his conviction that bread was generally adulterated with alum, producing injurious effects upon the health.

"The Examiner in Physiology in the University of London, and Professor of Medical Jurisprudence in University College also expressed the same opinion.

"An analytical chemist and surgeon, residing in Pimlico, stated that "Bread, no matter what price was paid for it, or whether supplied to workhouses or to her Majesty the Queen, was adulterated with alum."

"A London baker, who came forward on behalf of the trade, to deny that alum was universally used in bread, admitted that it was extensively used by the majority of London bakers.

#### "TEA.

#### "TEA.

"It appears from the evidence in regard to tea, that in the years 1847 to 1851, a certain quantity of spurious tea was imported from China; but that the importations were checked and ultimately stopped by its character becoming generally known, and the public refusing to purchase. In 1852, some which had cost the importers 1 s. per lb., had to be sold for 6 d. and 4 d. per lb., and ultimately to be exported, as the public refused to use it.

"That tea is usually sold to the public as imported, that there is scarcely any adulteration in this country, and that tea reaches the consumer in a purer state than most other articles.

"Evidence was given as to the facing or colouring of green teas; but this seems to be practised by the Chinese merely for the purposes of producing an article more in demand, both for the English and American markets; but it did not appear that the ingredients employed in thus facing or improving the appearance of green teas were likely to have any prejudicial effect upon the health of the consumer.

#### "COFFEE.

"That, according to the evidence produced in 1855, coffee was stated by one witness to be, 'with scarcely any exceptions, adulterated with chicory and other substances. The analysis was made at the commencement of the investigations published in the 'Lancet,' four years ago;' (since which time the Excise have prohibited, under a penalty of 100 l., the mixture of chicory with coffee, except sold in labelled packages). 'The result of the examination of 10 samples purchased since, was that two, labelled 'mixture of chicory and coffee,' were sold as coffee; one was properly sold as a mixture of chicory and coffee, and seven were genuine.

"That it was further stated by other physicians, that 'coffee is very much adulterated, but never found anything injurious. Chicory contains a little starch, a little gum, a little glucose sugar, a little fat, and is therefore nutritious to a certain extent;' and 'has found chicory present in almost all coffee, in various proportions. It has no nutritive qualities.'

"While from the evidence of the chief officer of the Excise analytical department, it appears that of 12,483 samples of coffee only 12 9-10ths per cent. were adulterated. A mixture of coffee and chicory may be sold, provided it is visibly labelled, 'This is a mixture of chicory and coffee;' if these words do not appear clearly on the package the dealer is proceeded against. Of the 12,483 cases examined, the chief were from the 30th October 1852 to August 1855. From the 30th October 1852 to the 29th October 1853, 5,276 samples were examined; of these 3,378 were purchased as coffee, 2,890 of this number being genuine, and 488 adulterated. The number of mixtures purchased in that year was 1898; 904 were properly labelled, 283 not labelled at all, and 19 contained other substances than chicory. From 30 October 1853 to 29 October 1854, 4,624 samples were examined; of these 3,434 were represented as genuine, and on examination 2,910 were found to be genuine, and 524 adulterated. Of the mixtures 1,208 were purchased; 882 were properly labelled, 265 improperly labelled, and 61 not labelled at all; and no other substance than chicory was found in them.

#### "SUGAR.

"That sugar appears, by the evidence of one witness, to be rarely adulterated; two out of 36 samples contained flour, one being tapioca, the other potato flour. Brown sugar contained particles of cane, so minute as only to be discernible by the microscope, and the insects acari were almost invariably present in brown sugar. Of 15 samples of refined sugar none contained acari or cane; animal matter was observed in 10 cases; sawdust, like fragments of woody fibre, was present in 12 samples.

"From the evidence of another witness, it appears that 'sugar is adulterated with lime; it is sugar refined in this country, and arises from imperfection in the process, not intentional fraud.'

"Cane sugar is adulterated with starch sugar, and sugar from potatoes; this is not at all injurious, but lessens its sweetening power. 'A year or two previous, when there were diseased potatoes, tons of sugar were made from them at one establishment in a week; the disease in the potato did not touch the starch.'

"To exhibit the erroneous impressions that exist upon the subject matter of this inquiry, the under-mentioned extract is given from the evidence of a highly intelligent witness: 'I assume that there is 10 per cent. of adulteration in sugar, and that therefore the revenue suffered a loss of half a million on the importation of sugar in 1854.' Bases his estimate upon the lowest calculation of Dr. Hassall's averages. (Dr. Hassall's is the first evidence quoted under this head; viz., 'Sugar is rarely adulterated.')

#### "MILK.

"That milk appears to be generally diluted with water; but only one well-authenticated case of adulteration by any other substance has come before your Committee, and that instance

1856.  
1884-1887, 1888.  
1885-1911.  
1954, 1955.  
1977, 1980.

250, 252, 256, 269.  
276, 290, 1518.  
1833, 1834, 1911.  
1931, 1933, 1953.  
1954, 2013, 2018.  
2020, 1956.

Dr. Hassall.  
15 of 1855.

Dr. Normandy.  
682 of 1855.  
693 of 1855.

Dr. Thompson, F.R.S.  
1211 of 1855.

G. Phillips, Esq.  
2149 of 1855.  
2189 of 1855.  
2191 of 1855.

Dr. Hassall.  
5 of 1855.  
16 of 1855.

R. D. Thompson, M.D.,  
F.R.S.  
1269, 1273-4.

Dr. Letheby.  
2757 of 1855.  
2758 of 1855.  
2773 of 1855.

Peter L. Simmonds.  
2043.

1856.  
712, 714.  
1465, 1496.

Dr. Hassall.  
21 of Sess. 1855.

Dr. Normandy.  
536 of 1855.  
564 of 1855.  
571 of 1855.  
812 of 1855.  
John Mitchell.  
1063 of 1855.

R. D. Thompson, M.D.,  
F.R.S.  
1186-9 of 1855.  
1197 of 1855.  
1198 of 1855.  
1473 of 1855.  
Mr. Postgate.  
2117-8 of 1855.

Dr. Taylor.  
35 of Sess. 1856.

Lewis Thompson.  
442 of 1856.  
450 of 1856.

Mr. W. Bastick.  
887 of 1856.

Dr. Chalfice.  
1400 of 1856.

Dr. Carpenter.  
2420-41 of 1856.

Mr. Rodgers.  
3279 of 1856.  
3357 of 1856.

Mr. Callard.  
3594 of 1856.



instance consisted of a small quantity of chalk being discovered at the bottom of the vessel containing the milk. One other case was mentioned in which a sediment, supposed to be chalk, was also discovered, but in this instance your Committee ascertained that the milk was supplied under contract, at a price quite inconsistent with the supply of genuine milk, viz., 5  $\frac{1}{2}$  d. per barn gallon delivered in Bermondsey from Essex.

#### "BEER.

"That in regard to beer the evidence tends clearly to show that the public do not generally obtain pure beer and full measure at the prices paid; while the evidence is equally conclusive that at said prices, pure beer and full quantity could not be rendered by the vender except at a loss upon the price paid to the brewer.

"A general practice of adulteration is alleged to take place in the article sold by retail. It appears that beer is considerably diluted on the publican's premises with water, and that various drugs or other matters are frequently introduced to make up for the loss of strength caused by such dilution. Several witnesses have asserted that cocculus indicus is largely imported for the purpose of adulterating beer, no other use being known for that article; two cases were instanced where it was actually discovered, one being on the premises of a brewer, and in the other on those of a publican.

#### "SPIRITS.

Hassall.  
5. 15. 93. 95. 150.  
151. 97. 101. 105.  
106. 112.  
735 of 1855.  
738.  
Dr. Normandy.  
94.  
96-7-8.  
97-8-9. 2280.  
1931.  
Dr. Redwood.  
1932.  
1904.  
1905.  
1906.  
2255 of 1855.  
2269 of 1855.  
2256 of 1855.

"That gin appears to be generally diluted for the purpose of lowering the price, and that various decoctions are subsequently introduced to supply the peculiar properties supposed to belong to the pure spirit. Many of these articles, however, although 'possessing very terrifying names, as oil of vitriol, or sulphuric acid, cannot, in the proportions in which they are used, be looked upon as poisons.' It is, for instance, believed that pure gin, that is, alcohol flavoured with juniper berry, is not to be met with, inasmuch as all rectifiers appear to use 'gin flavourings,' made from various aromatic and carminative substances, such as orange peel, coriander, &c., which please the palate of the consumer better than pure gin, of which indeed the public scarcely know the taste. If a retailer 'never sold anything but absolute alcohol, it could not be drunk by the public without their being greatly injured. The publican would then have to dilute it with such a quantity of water as would render it suitable as a beverage.' The publican does not profess to sell absolute alcohol, and the public knowing nothing of the manufacture of gin, are content with what is usually sold under that denomination: the term gin being merely conventional, and applying equally to the mixture sold by the publican as to the spirit sent out by the distiller, and is in fact more generally understood to represent the mixture. For the same reason the revenue does not sustain loss, because no man could drink proof spirits, and if the publican did not dilute the spirit, he 'must fall back upon the wholesale dealer and have it made up to the strength he requires, sweetened and all.'

As respects brandy, no evidence of adulteration was adduced before your Committee; two witnesses alluded to the substitution of British for foreign brandy.

As to rum, one witness only stated that he had, upon analysis, discovered, in addition to water, a residuary extract of cayenne pepper, which had probably been added in the shape of tincture of capsicum.

#### "WINE.

71 to 79 of 1856.

"That port wine appears, in some cases, to be made up of mixtures of other damaged wines and brandy, with certain ingredients intended to impart to the compound the characteristics of genuine port wine. These ingredients, in the case put before the Committee, as stated in a recent action against the London Dock Company, were not injurious to health, but would produce an astringent tonic mixture. Damaged wines are said to be bought by publicans for the purpose of being manufactured as above described.

1502-1504 of 1856.

That sherry wine appears to be less the subject of manufacture than port.

#### "COLOURED CONFECTIONERY AND FLAVOURING SUBSTANCES.

66. 69. 150 of 1855.  
2768, 2769 of 1855.  
2771, 2772 of 1855.  
4. 8. 9. 14. 28 of 1856.

That the ingredients used in colouring confectionery, and flavouring in cooking, are many of them of a most injurious character, and some of a deadly poisonous nature, as instanced in cases where fatal results have ensued from their use, especially in regard to coarse confectionery, and its effects upon the life and health of infants and very young children.

#### "PICKLES.

1563-1569 of 1855.

"That pickles were formerly made in copper vessels, by which a green colour and poisonous character were obtained; this practice appears now to be discontinued by the more extensive manufacturers.

#### "DRUGS.

#### "DRUGS.

"That in regard to drugs, your Committee find that previously to the establishment of the Pharmaceutical Society in 1841, drugs were to a very considerable extent sold in an impure condition; so much so, as to induce the formation of that society for the purpose of promoting the education of pharmaceutical chemists, and thereby to prevent, among other abuses, the adulteration of drugs.

The Pharmaceutical Society number some 3,000 members. Sess. 1856. 2315, 2316.

"That subsequently a very considerable improvement has gradually taken place in many of the drugs and chemicals which are sold, in consequence of more perfect processes of manufacture, the tests for their purity having become more generally known, and the attention of chemists having been drawn to the subject.

1800 to 1808 of 1855. 2317. 2319. 2320.

"That one cause of impure drugs finding their way into consumption, may perhaps be found in the fact that any person, however unqualified by his previous pursuits, may open a chemist and druggists' shop; and although totally unable to judge of the quality of the drugs supplied, may be made the vehicle for dispensing impure or fraudulently adulterated articles.

2342 of 1856.  
2345 of 1856.  
2346 of 1856.  
572 of 1855.  
573 of 1855.  
2718 of 1855.  
2719 of 1855.  
1797 of 1856.

"That very serious consequences have not unfrequently ensued from accidentally taking poisonous medicines intended for external application, arising from the fact of draughts and lotions being sent to the same person in bottles of similar size and shape, and from the want of some generally recognisable mode of distinguishing liquids or powders of a poisonous nature.

#### "PREVENTIVE MEASURES.

"That several preventive measures were suggested to your Committee, to some of which they now briefly advert. One suggestion propounded by a gentleman who is a solicitor, and chairman of a local Board of Health, was to pass an Act of Parliament, giving the requisite authority, and then to issue a Treasury Minute stating what articles should not be dealt in, and any person found dealing therein after such notice, to have interrogatories filed against him, and be compelled to answer them upon oath, either admitting or denying his guilt; these interrogatories to be followed up by power to the registrar of the Court, or other officer to be appointed, to inspect premises and books, and to examine witnesses. If the guilt be admitted, an injunction should issue from the Court forbidding him to continue the sale; disregard of the injunction to be a contempt of Court, and to involve liability to imprisonment until he gives satisfaction to the Court against a repetition of the offence.

Preventive Measures, No. 1. Mr. Wallington.

"Another suggestion, emanating from a former Member of this House, a gentleman whose opinions are entitled to great consideration, from his long experience and present public position, was to the effect that a light active machinery should be set in motion, through the General Board of Health; that articles should be purchased and examined, and thereafter the names and addresses of the vendors should be published; the effect of which would be to inflict disgrace upon the dishonest, and to confer a benefit upon the honest trader; these names and addresses should be placarded in public situations, such as the doors of churches, chapels, vestries, town halls, police stations. This publicity, together with power to certain officers to enter at all hours between sunset and sunrise, every place where they had any ground for suspecting that adulterations were practised, and the infliction of light penalties in cases where the adulterations were found to be prejudicial to health, the offence being at the same time treated as one against public morals, followed up by imprisonment after three or four convictions, would, in the opinion of witness, put an end to the practice of adulteration in three or four years. That with proper powers, adulteration might be put down in London at an expense of 10,000 l. a year, the employment of some 10 persons being sufficient, say six purchasers and four examiners.

Preventive Measures, No. 2. Mr. Wakley.

"The last-mentioned proposition embodies the principle of many other suggestions made to your Committee, some extending it by causing the party convicted of adulteration to exhibit, for a period of six or nine months, a placard in his own shop window, stating the fact of such adulteration having been proved against him, and the sentence inflicted; also that all tradesmen should be registered, and struck off the registry after repeated instances of adulteration proved. Other witnesses have referred to the systems of inspection adopted in France, Germany, and America, as being worthy of imitation, but these appear to involve so many hindrances to the free course of supply and demand, as to unfit them for the commercial usages of this country.

Other Preventive Measures.

"That upon the first of the two principal propositions for remedying the evils complained of, your Committee would observe, that it appears calculated to arrive, indirectly, at the same result as may be obtained in a much more simple and summary manner under the existing law, in respect to most of the articles to which it would be applicable, viz., fine and imprisonment; for, although the proposer disclaims any intention of inflicting a fine, it cannot be doubted that the offending party would be mulcted in the costs of the proceedings, and to any one acquainted with the expense of filing and answering interrogatories, and obtaining an injunction from a court of law, it will be apparent that the amount will far exceed that of the minimum fines imposed by law for many of the offences which might be supposed to fall within the scope of the plan suggested, the principal difference being that, instead

Preventive Measures, Mr. Wallington.

instead of such sums, or a moiety thereof, being paid, as now provided, into the public Exchequer, they would find their way into the hands of the legal profession, to whom recourse would naturally be had by at least one, if not both, parties, while the suggested imprisonment for contempt of court, on a repetition of the offence, would complete the double sentence of 'fine and imprisonment.' Irrespective of the foregoing objections, there is the very grave one of calling upon a man to convict himself, a practice totally at variance with the principle of English law.

Preventive Measures,  
Mr. Wakley's.

"That the second series of preventive measures appear also open to numerous objections. It is suggested that examinations should be made of various articles, and the results published in every practicable way. Upon this, your Committee would observe, that unless the articles of the whole of the tradesmen in a town could be examined at the same time, it would be a manifest injustice to advertise the names of some few as persons who sell pure goods, the tendency of which would be to procure them additional and exclusive custom at the expense of their fellow tradesmen, who might be found selling articles equally good, although not reported on by the official inspectors or analysers; the injustice of the case being moreover increased by the fact, that in carrying out such an investigation, considerable expense would be incurred, to which the unreported tradesmen would have to contribute through the rate or tax collector. Upon the question of this expense, your Committee cannot agree with the propounder of the measure, who stated that he thought he could put down adulteration in London for 10,000 L. yearly, employing for the purpose six purchasers and three or four examiners. That it appears by a Return from the Inland Revenue Department, that the number of licenses granted to persons within the bills of mortality is 48,750; and inasmuch as most of the articles represented to be adulterated are the subject of sale in those shops, it follows that each of the six purchasers would have to undertake the visitation of upwards of 8,000 establishments during the year, independently of the great number of shops that do not deal in exciseable articles; such, for example, as bakers, &c. Comparing this proposed rate of inspection with that carried out by the Excise, your Committee find that in the United Kingdom there are some 550,000 manufacturers and dealers under supervision, and that the number of Excise officers employed is about 4,000, as being at the rate of 137 establishments for each officer to inspect in place of 8,000, as proposed to be inspected; and upon these it is admitted that a second call must be made before proceedings are adopted. Your Committee further find it suggested, as a part of this plan, that if adulterated goods are found in the shop of a retail dealer, and he gives up the name of the wholesale dealer from whom he bought them, he ought to be exonerated. This proviso appears to your Committee to exhibit the weakness of the whole scheme, because, if this principle is admitted, it would be manifestly unjust to deprive the wholesale dealer of the same immunity; and thus, in the case of drugs, for instance, the authorities might be ultimately referred to the merchant at Smyrna, Constantinople, or elsewhere, and all the investigation be thereby rendered fruitless.

"With regard to the suggestion of compelling a man to exhibit a placard in his window, stating that he had been convicted of adulteration, your Committee conceive that no person would do so without attempting to vindicate himself by a counter-statement, in which, most probably, he would endeavour to prove harsh and unjust treatment by the authorities; a subject which usually commands the attention and sympathies of the poorer classes, in whose neighbourhood the most frequent cases would occur, and the man might thereby be considered as a martyr, and not improbably increase his business; or he might, on the contrary, become a ruined man, a penalty not contemplated, and possibly very much out of proportion to his offence.

"After a careful consideration of the evidence adduced during their protracted sittings, your Committee are of opinion that there has been much unnecessary and groundless alarm created in respect to the extent of adulteration at present practised in regard to the principal articles of consumption. On reference to the Evidence it will be seen that many loose and vague statements, as to adulteration, were narrowed down, under examination, to cases of dilution of strength, or the admixture of inferior with the better qualities of the same article, in order to effect a reduction in the price, while a great mass of the evidence had reference to a state of things which no longer exists, one of the most important and intelligent witnesses going back as far as the year 1810 for an instance of adulteration in drugs.

"That as regards the principal articles of food and drinks, viz.:

Bread,  
Flour,  
Tea,  
Coffee,  
Sugar,  
Milk,  
Beer,  
Spirits,  
Wine,

3 & 4 Geo. 4.  
6 & 7 Will. 4.

Your Committee find that there are already several most stringent and summary Acts in force. That the Act 3 & 4 Geo. 4, c. 55, imposes a penalty of 20 L. or six months' imprisonment with hard labour and publication of sentence, upon the mixture of alum with bread.

bread or flour, within the bills of mortality; and the 6 & 7 Will. 4, c. 37, extends the same provisions to the country, the penalty being 5 L. to 10 L. or six months' imprisonment and publication of sentence; notwithstanding which it was proved before Your Committee, that nearly every sample of bread analysed contained alum, added for improving the colour, &c. That the same process is repeated frequently with flour, under the liability of a penalty of 5 L. to 20 L., and publication of sentence. That the penalties for adulterating tea or coffee are also very heavy, being 100 L. for each offence.

"That in regard to beer, Your Committee find even heavier penalties than are imposed on the foregoing articles: the 56 Geo. 3, c. 58, imposes a summary penalty of 200 L. upon any brewer or retailer of beer having or receiving into his possession any drugs or substances for mixing with beer; and a penalty of 500 L. is imposed on any druggist selling drugs to any brewer or retailer of beer for the purpose of mixing; notwithstanding which it was proved before Your Committee, that the supply of drugs to brewers and publicans is an established trade. That it would be scarcely possible to frame more stringent laws in regard to the adulteration of spirits, and yet a large portion of the evidence shows that gin, being the article for which there is the greatest demand, is invariably adulterated.

"That in regard to the almost invariable practice of using alum in the manufacture of bread, in order to meet the requirements of the public, and the conflicting chemical testimony as to its positive existence as alum, and, consequently, as to its effects on the human system after the process of baking, Your Committee refer to the following contradictory evidence:

"The principal injury to the human system from the use of alum in bread is the stringent effects it exerts, tending to produce that costiveness which is a very common complaint in large towns: witness has found crystals as large as a pea.

"In eating bread a person does not eat alum; its property is totally destroyed; and, after baking, bread in which alum had been mixed would contain, not alum, but the constituent parts, one of which, bisulphate of potash, is a very harmless agent of a purgative nature, and rather beneficial than otherwise, especially with sedentary people.

"Boiling heat would be sufficient to effect the dissolution of alum to its component parts.

"The heat in baking bread would melt the alum, and make the crystals effloresce. Alum will melt at a temperature of about 300 degrees, baking heat being above that.

"The existing regulations with respect to the sale of coffee appear to be working very effectively for the purpose of preventing imposition in the admixture of other substances than chicory.

"That no sufficient reasons have been brought before Your Committee to induce them to recommend the adoption of any further legislation in regard to the several articles of bread, flour, tea, coffee, sugar, milk, beer, spirits, and wine; being convinced that no more stringent measures than those now in force could be adopted, without enhancing the cost of the necessities of life, and without such an injurious, vexatious, and inquisitorial interference with trade as would be totally at variance with the more enlightened policy of all recent legislation, and such as would most materially prevent the development of the system of freedom of commerce, to establish which has of late years been the constant study and aim of the Legislature.

"That the Evidence adduced with respect to drugs, however, lead Your Committee to the conclusion that their immediate effects upon human life, whether administered by accident, or from ignorance, or fraudulently impure, place them in a different category from articles of food, and render it desirable that some further improvement should take place in regard to the mode of dispensing medicines, the public being unable to exercise the same power of discrimination as they naturally possess in reference to articles of daily food; and that therefore some additional provision may beneficially be made by the Legislature, both as to the qualifications of the persons who shall be entitled to deal in them, and also as to the means of preventing the fatal errors which appear to have occurred in administering medicines.

Motion made and Question proposed, "That the Draft Report of the Chairman be read 2<sup>d</sup>, paragraph by paragraph."—Amendment proposed, to leave out the words "the Chairman," and insert the words "Mr. Moffatt," instead thereof. Question put, "That the words 'the Chairman' stand part of the question." The Committee divided:

Ayes, 8.

No, 1.

Mr. Swift.  
Mr. Cowper.  
Mr. Alderman Cubitt.  
Mr. Sheridan.  
Mr. Peacocke.  
Lord Goderich.  
Mr. Kinnaird.  
Mr. Knight.

Mr. Moffatt.

Main question put, and agreed to.

[Adjourned till Friday next, 18th instant, at Twelve o'clock.

Acts  
10 Geo. 1, c. 10.  
11 Geo. 1, c. 30.  
17 Geo. 3, c. 29.  
43 Geo. 3, c. 129.  
59 Geo. 3, c. 53.

4389 of 1856.  
2421 of 1856.  
2420 of 1856.  
1404 of 1856.

447-8 of 1856.  
452-3 of 1856.  
454-456, 458 of 1856.

821 of 1856.

1832 of 1856.  
1833 of 1856.  
1834 of 1856.

Veneris, 18<sup>o</sup> die Julii, 1856.

## MEMBERS PRESENT:

Mr. SCHOLEFIELD, in the Chair.

Viscount Goderich.	Mr. Cowper.
Mr. Alderman Cubitt.	Mr. Otway.
Mr. Moffatt.	Mr. Gregson.
Mr. Swift.	Mr. Kinnaird.
Mr. Sheridan.	Mr. Villiers.

Draft Report of the Chairman read 2<sup>o</sup>, paragraph by paragraph.

Several amendments made.

Amendment proposed in page 2, at the end of the 2d paragraph, to add the following words: "But although the evidence establishes the fact that adulterations such as those now recited are in some instances constantly, and in others occasionally, practised, it was not proved (excepting, probably, in the case of bread, and of confectionery, and drugs) that effects generally injurious to the public health had resulted therefrom." (Mr. *Moffatt*).—Question put, "That those words be there added." The Committee divided:

Aye, 1.	Noes, 4.
Mr. Moffatt.	Mr. Cowper.
	Viscount Goderich.
	Mr. Alderman Cubitt.
	Mr. Kinnaird.

Paragraph amended and agreed to.

Other paragraphs read, amended, and agreed to.

Amendment proposed, in page 5, paragraph 3, to leave out from the word "it" to the end of the paragraph (Mr. *Moffatt*).—Question put "That the words proposed to be left out stand part of the paragraph." Committee divided:

Ayes, 3.	Noes, 3.
Viscount Goderich.	Mr. Alderman Cubitt.
Mr. Sheridan.	Mr. Moffatt.
Mr. Cooper.	Mr. Swift.

Whereupon the Chairman declared himself with the Noes.

Words omitted.

Question put, "That the paragraph as amended stand part of the proposed Report." The Committee divided:

Ayes, 4.	Noes, 2.
Viscount Goderich.	Mr. Moffatt.
Mr. Swift.	Mr. Alderman Cubitt.
Mr. Villiers.	
Mr. Sheridan.	

Other paragraphs read, amended, and agreed to.

Amendment proposed, in the 8th paragraph of the same page, after the word "imprisonment" to leave out the words, "in every case where pecuniary fraud" (Mr. *Moffatt*). Question put, "That the words proposed to be left out stand part of the paragraph." The Committee divided:

Ayes, 5.	Noes, 2.
Viscount Goderich.	Mr. Alderman Cubitt.
Mr. Swift.	Mr. Moffatt.
Mr. Sheridan.	
Mr. Cowper.	
Mr. Otway.	

Several other paragraphs read, amended, and agreed to.

Question, "That this be the Report of the Committee," put, and agreed to.

Ordered to Report, together with the Minutes of Evidence.

[To Report.]

## EXPENSES OF WITNESSES.

NAME of WITNESS.	Profession or Condition.	From whence Summoned.	Number of Days absent from Home under Orders of Committee.	Expenses of Journey to London and back.	Allowance during Absence from Home.	TOTAL Expenses allowed to Witness.
				£. s. d.	£. s. d.	£. s. d.
William Emmerson -	Manager, People's Flour Mill, Leeds.	Leeds - - -	3	2 10 -	3 3 -	5 13 -
Edward Farrand -	Bookkeeper, Roch- dale.	- - - -	3	2 13 -	1 10 -	4 3 -
Dr. Neligan -	Physician, Dublin	Dublin - - -	3	6 10 -	9 9 -	15 19 -
Reginald Richardson -	Officer Local Board of Health.	Newton Heath, Manchester.	3	3 10 -	4 4 -	7 14 -
Peter Mackenzie -	Editor - - -	Glasgow - - -	4	10 3 6	4 4 -	14 7 6
Dr. Bingley -	Physician - - -	Sheffield - - -	3	4 10 -	9 9 -	13 19 -
						£. 51 15 6



## LIST OF WITNESSES.

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Professor John Thomas Quekett - p. 36  
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*Mercurii, 16° die Aprilis, 1856.*

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Mr. Thomas Karr Callard - - p. 331  
Mr. Alexander Robertson - - p. 337  
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*Veneris, 25° die Aprilis, 1856.*

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Samuel Robert Goodman, Esq. - p. 258  
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*Veneris, 2° die Maii, 1856.*

George Moffatt, Esq., M. P. - - p. 289  
Arthur Hill Hassall, M. D. - - p. 290

*Memorandum.*—In consequence of an error in the paging subsequent to page 152, the Evidence of the Witnesses should be referred to only under the respective *Dates* of the meeting of the Committee.

## MINUTES OF EVIDENCE.

*Mercurii, 27° die Februarii, 1856.*

## MEMBERS PRESENT.

Mr. Scholefield.	Mr. Villiers.
Mr. Cowper.	Mr. Otway.
Viscount Goderich.	Mr. Peacocke.
Mr. Gregson.	Mr. Sheridan.
Lord Claud Hamilton.	Mr. Swift.
Mr. Moffatt.	Mr. Wise.
Mr. Alderman Cubitt.	Mr. Kinnaird.

## WILLIAM SCHOLEFIELD, Esq., IN THE CHAIR.

Professor Alfred Swaine Taylor, called in; and Examined.

1. *Chairman.*] YOU are Professor of Medical Jurisprudence and Chemistry in Guy's Hospital?—I am.

2. Have you occupied that position for a considerable number of years?—I have done so for 24 years.

3. Have you turned your attention much during that period to the question of adulteration as applicable to food or to drugs particularly?—Not specially to adulteration, though cases of that nature have come before me; my attention has been chiefly given to the admixture of poisons with articles of food, either unintentionally or wilfully; during that period, however, I have had many instances brought before me connected with the adulteration of food.

4. Will you favour the Committee with such facts as have come to your knowledge bearing upon the subject?—The first subject which I have particularly attended to, and upon which I have had some experience, is the admixture of colours in confectionery. The substance called Scheele's green, which has been already brought before the Committee by some of the witnesses, was formerly very much used, and is still used to some considerable extent, for colouring confectionery, and many cases have come before me, some in which death has been occasioned, and others in which serious illness has been occasioned by the use of it. I have a memorandum of the cases of 14 children, who all suffered on one occasion from the symptoms of poisoning by arsenic, in consequence of eating confectionery coloured with this mineral; in another case, in 1853, two children died from eating small pieces coloured with this substance.

5. You are understood to say, that this substance is still very generally in use, but not so much so as it was formerly?—Since this inquiry has been undertaken I have not observed it so much.

6. *Mr. Moffatt.*] Is that green colour used in preserved fruits and in confectionery also?—It is only used on the outside; about two or three grains of it would be sufficient to destroy life. Besides being used for confectionery, it is very much used in the arts, and sold as a pigment for common purposes. Indeed, there appears to be great ignorance about its dangerous properties. In the spring of 1854, I found that a loaf which was put upon my breakfast table, contained at the bottom of the crust a quantity of this mineral, and suspecting

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pecting from its appearance what was its nature, I made an immediate examination of it, and found Scheele's green over the bottom of the loaf in various parts. That alarmed me. I examined the toast which was made, and there were particles of Scheele's green about it. I knew there was no compound of that kind in use in my house, and I immediately went off in a cab to the baker to see him upon the subject, and on entering the shop I at once saw the cause; he had had the whole of his shelves painted with this rich green colour, and there were than more 100 loaves, possibly there were 200, placed upon those shelves, and upon examining the bottom of the loaves, I found that the shelves having been recently painted, the bread being put upon them warm, a quantity of mineral poison had adhered to it. I explained to him the great danger of it, and warned him against sending out any of the bread. He was quite ignorant of the nature of the substance, and he immediately had the mischief remedied. This kind of paint is sometimes used on greengrocers' stalls, on which acid fruits are exposed. I mention this to show that accidents may occur, and poison get into a person's body without his being aware of the mode of its being introduced.

7. *Chairman.*] Would there be any difficulty in substituting a harmless green for that dangerous substance?—I think not any difficulty at all. It is, however, a particularly rich and bright green, so that it is rather sought after by colourists.

8. Other colouring matter might be found of a harmless character?—Yes. I should observe that this substance, Scheele's green, is used or has been used under the name of extract of spinach. So much ignorance existed about the nature of it that it was supposed to be a vegetable extract. There was a gentleman poisoned at Northampton, about seven years ago, whose death led to a trial, in consequence of the confectioner having coloured some sugar in the form of cucumbers with this substance; it is a substance the general use of which ought, in my opinion, to be prevented. With respect to the blues, I have not found anything injurious about them. The blue colour used for confectionery, besides Prussian blue, has been chiefly ultramarine; but with regard to blues, Prussian blue itself is not a substance which we regard as a poison. With respect to reds, I have occasionally found vermilion and red lead used for colouring confectionery; both of those are noxious. With respect to yellows, I have found oxide of lead and chromate of lead. Another substance, which partly led to the death of a child in 1853, was what we call orpiment, which had been used for colouring the outside of some sugar sweetmeat, and the child accidentally picked it up in the street; it was the sulphuret of arsenic, of a bright golden yellow colour; it had been used with Scheele's green to colour the confectionery, and that child died from the effect of it. I believe, with regard to all those colours, substitutes might be found for them which would be perfectly innocent. Turmeric might be used as a yellow, and cochineal and madder as pinks. It is in a great measure from ignorance of their dangerous nature that the others are used.

9. Would those other colouring matters be more costly?—I do not think there would be any particular difference in that respect.

10. Are you aware that in any country it is the habit of the Government to forbid the use of certain colours for this purpose?—I am aware that several orders have been issued in France at different periods, and that they have been confirmed up to a late period; some are dated in 1831, 1833, and 1843, and in them the French Government have strictly prohibited the use of the substances I have mentioned as well as others.

11. Do you know whether that has been done by direct legislation, or is it a municipal regulation?—I think it is a municipal regulation.

12. It is an order issued on the part of the police, is not it?—I think it is.

13. *Viscount Goderich.*] Has that order reference only to Paris?—It has reference to France generally. I can give the Committee one of the latest French orders, which was issued in this form: all mineral colours were prohibited except Prussian blue and ultramarine; this, I should say, was dated 22d September 1841, and was confirmed by another ordinance in 1853. Vegetable colours are allowed except gamboge and the aconitum napellus or monkshood. The second point referred to the wrapping of confectionery in paper coloured by mineral substances; that was strictly prohibited. The use of mineral substances for colouring paper to be applied in wrapping confectionery was prohibited,

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prohibited, except Prussian blue and ultramarine. Thirdly, the paper wrappers were always compelled to be issued with the name and address, and no metallic substances were allowed to be used. Then there was an order for the annual inspection, and certain articles prohibited are enumerated; not only the substances themselves are prohibited, but any mixture of them. The penalty imposed was from six months to two years' imprisonment, and a fine of from 16 to 600 francs. The exposure for sale was also penal.

14. *Chairman.*] Is not essential oil of almonds very largely used for flavouring sweetmeats and confectionery?—It is very largely sold and used; it is extracted by distilling bitter almond cake with water. I should observe, that it is a most powerful poison, containing from six to 12 per cent. of prussic acid, and it is rather variable in strength, which makes it still more dangerous in the mode in which it is used by confectioners. The poisonous oil is used by perfumers for giving an odour to soaps and cosmetics, and liquids for the hair. I have not heard of an accident from its use in cosmetics, but it is a very powerful poison in itself; 20 drops, or rather less than half a teaspoonful of that oil, killed a woman 49 years of age in half an hour. Many suicides have occurred, as well as fatal accidents, from the easy way in which it is sold. Its flavour and odour lead persons to taste it, and that tasting, I need hardly say, may be a very serious thing. In fact it is kept and sold in the shops in a most dangerous manner.

15. Do they sell it labelled "poison"?—I have not generally seen it so sold; lately I have seen it to be more so, but as a rule I have not observed it. There is a compound, which is more generally known, which contains about one drachm of the oil to seven drachms of spirit; it is called almond flavour, and is a solution of the oil in spirits of wine; its strength varies very much, of course, according to the strength of the oil. I have published an account of several fatal cases from the accidental or the intentional swallowing of that liquid. In March 1843 half an ounce killed a woman aged 39 in half an hour. The strength of that flavour must depend, of course, upon the strength of the oil from which it is made. In one case a large spoonful might not prove fatal, and in another a much smaller quantity might. The point to which I particularly wish to call the attention of the Committee is the use of it by cooks and others. As there is no sort of measurement of the strength of the original oil when it is made up, it may give rise to accidents, and it has sometimes done so. I have heard of children being made ill, and of drowsiness and other symptoms being brought on by the use of an undue quantity of that substance. It is constantly used for flavouring puddings and similar articles. If the pudding or custard is heated, the acid may be distilled away, but if it is used cold there is always danger of a dose of prussic acid being taken.

16. Is there no fixed standard of strength whatever?—None whatever; it varies from six to 12 per cent.; I think the sale of that poisonous oil and flavour, more especially by confectioners, should be prohibited. Druggists I believe are more cautious in vending it, knowing the effects of it, but confectioners for the most part are ignorant of the effects, and therefore they sell it in any quantity. In fact, cooks have been known to use it secretly when it has been prohibited, and have pretended that they have given the flavour by means of bay leaves, when to save themselves trouble they have used this substance.

17. Is there any other means of giving the flavour which is peculiar to oil of almonds?—Yes. The prussic acid may be separated from the oil. It is said that the oil even so freed is not devoid of danger; but if the prussic acid were distilled, a quantity might be used for flavouring which would not interfere with the general use of it.

18. *Mr. Moffatt.*] It is not the prussic acid which gives the peculiar flavour to this substance?—It is not; the flavour and the odour are chiefly owing to the oil independently of the acid. So that there is no excuse for selling prussic acid but laziness and ignorance.

19. Would the expense be greatly increased by separating the prussic acid?—The article would be made a little more expensive, but not materially so.

20. How is that oil obtained?—It is obtained by distilling what is called the pulp of the bitter almonds with water. The prussic acid does not exist in the almond itself, but it is the result of the action of the water upon some of the elements of the almond during the process of distillation. The oil is at the



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same time produced, and comes over with it; but by distillation with a little oxide of mercury, or even oxide of iron, it is possible to separate the prussic acid, and the oil will pass away, and it might be used to give a flavour in that state.

21. Is the oil manufactured in this country, or imported?—Some of it is made in England.

22. Mr. Peacocke.] Is this essential oil sold by confectioners as essential oil?—They sell generally what they call almond flavour.

23. It is not sold as essential oil of almonds, is it?—No; it is sold under the name of essence of peach kernels.

24. It is the case with chemists, is not it, that they are bound to mark all bottles which they send out containing poison with the word "poison"?—They ought to do so, but there is no penalty, I believe, for their not doing it. All respectable chemists, however, take great pains to prevent danger; but there is so much difference of opinion as to what is poison, and what is not, that sometimes a poisonous substance may go out which is unlabelled.

25. Chairman.] Are the various essences of pear drops and peach drops, and others, flavoured with this substance?—No; there are various other flavours in use.

26. Do they all contain the element of prussic acid?—No; some of those drops are noxious, though they contain no prussic acid. Other compounds have been lately made which imitate the flavour of Jargonelle pear and Ribstone pippin; those are compounds of fusel oil, which is a noxious oil obtained from the distillation of grain, and by a chemical process the flavour can be imitated as well as the odour to a remarkable degree. I have heard that some of the Jargonelle pear drops and the Ribstone pippin drops have produced drowsiness and stupor in children. It is an imposition on the public to sell in this way a chemically flavoured substance under another name.

27. Mr. Sheridan.] From whom do the pastrycooks obtain this essence of peach, and similar essences?—They buy them of the manufacturers. I believe they buy them in the form of oil, and mix them for themselves.

28. Do they ever purchase the oil from apothecaries?—They may buy it at the druggists. I have had occasion, among other matters, to examine hair dyes. I do not know whether those come under the observation of the Committee, but many of them contain oxide of lead, which is a noxious substance. Many of those hair dyes are compounds of oxide of lead and lime, and when mixed up in a paste and put on the hair, the effect of the sulphur in the hair by acting on the lead, produces a darkened colour of the hair. It is thus the hair is darkened; but during this time absorption of the oxide of lead often goes on; and I knew a case in which a lady suffered from complete paralysis and distortion of the neck in consequence of having used this hair dye for some time. One of her friends seized a portion of it, and sent it to me for analysis, and it contained 80 per cent. of oxide of lead. I advised that it should be left off, and she perfectly recovered. That, however, is a matter of option; it is only desirable that persons should know what is in those substances. With regard to lead again, there are many articles of common wear, which are sold to poor people, which are very badly glazed, so that the acids of the fat dissolve the glaze: dripping will do so, and I have known colic produced as the result of that. That, however, is a question of manufacture, but it is one instance of the mode in which lead may get into the system. I have had to examine cases in which preserved fruits have been kept in glass bottles with pewter stoppers. A few years ago there was a patent about to be taken out, but I gave the opinion that it was a highly dangerous proceeding, and since then it has been withdrawn. The presence of salts of copper in preserved fruits has been already brought before the Committee. I have had one or two cases of this kind of impregnation of preserved fruits, in which symptoms of poisoning were produced. One instance, I bear in mind, was a case in which a cook purchased from a druggist's a quantity of sulphate of copper, and boiled it up with gooseberries, to give them a rich green colour. This was at one time used in pickles, but I believe now there is a general desire, on the part of picklemakers, to produce them of the proper and natural colour. Then, also, I have examined what Dr. Hassall and Dr. Normandy have examined, namely, the state of the anchovies sold in London. They are

are, or rather they were, very often coloured with red paint, containing oxide of iron; there was a very large quantity of oxide of iron used.

29. Is that a dangerous substance?—No. By some dealers it was mixed to a large extent. It would seem, however, as if the public prefer their anchovies thus coloured, for I think there is a great demand for the red anchovy.

30. Mr. Moffatt.] Is oxide of iron a noxious substance?—It is not.

31. Viscount Goderich.] Are anchovies ever red without the use of oxide of iron?—I have seen them in Italy, where they use no oxide of iron, of a reddish brown colour. On being put into salt and brought here, they become a little more brown. I am in the habit of using them without the red colouring matter, and they are very good. In the old mode of colouring, it was possible, under the microscope, to see the quantity of oxide of iron.

32. Mr. Cooper.] Is there not a very different kind of fish sent from Holland, and coloured on purpose to resemble anchovies here?—I think that is the case; they are not genuine anchovies, but they are made to look like anchovies; and you might always suspect that, where so much colour is used.

33. You do not think that the anchovies you speak of, which come from Italy, are coloured?—No; except it may be a quantity which, being damaged, has been put into a jar with this oxide of iron.

34. In fact it is not done to please so much the fancy of the public, as in order to substitute a different article?—Yes; and I will also add to that, that genuine anchovies present an objectionable appearance by long keeping, and having lost the colour they once possessed, it is restored to them by this process.

35. Chairman.] Have you made any observations upon the article of bread?—Yes. I should state that I have not purposely sought these instances, but they have come before me as matters of inquiry. I have had to examine many samples, chiefly of the best quality of bread; in respect to that, I must say that my results are rather different from those which I have heard given in evidence. I have not found the quantity of alum which has been described; I have found salt and phosphate of lime, with a little carbonate of lime; the salt being added to the bread, and the phosphate and carbonate of lime being earthy materials, which are always more or less found in grain; I have not found them in bread in any undue proportions. There was only one case in which it appeared to me there was some trace of alum. I suppose I have examined bread once or twice a year, during the last 10 or 12 years, and I have not found alum in it; I have found sulphate of lime.

36. Have you ever examined bread which was purchased in other than the better parts of the town?—I have not; I have examined chiefly that which is sold at the West End of London; I have examined my own bread in this way. I think it is not unlikely that in the worst districts alum may be mixed with flour, and incorporated with bread of a cheap kind.

37. Do you believe the admixture of alum with bread would be very injurious?—Not in small quantities; but it would in the large quantities I have heard described; taken day by day its effect would be to produce constipation, or rather irritation of the bowels. Most of these things ought to be looked at in this aspect. It is not generally the case that there is enough taken of the deleterious substance to produce injury which is observed at the time, but it is the introduction day by day of these substances into the body which does the mischief. I have also examined flour on several occasions where it has been suspected to contain chalk and other substances; but, generally speaking, I have found the flour which I have had submitted to me which was suspected to be wrong, to be good; I have not found a greater quantity of ash in it than flour ought to contain. All those substances contain more or less ash. I have lately had to examine some flour from Essex, and 100 grains of the best flour yielded only one half grain per cent. of mineral matter, and the household sixth-tenths of a grain; in examining the ash I found it to consist of carbonate of lime, phosphate of lime, and a small quantity of oxide of iron, there being no alum or any other mineral. That is the flour which I myself use, and have used for some time; it is perfectly genuine and good flour.

38. Do you know anything of the baking powders, as they are called?—Yes; they are compounds chiefly of carbonate of soda and tartaric acid.

39. Are they extensively used?—Yes, they are by some; they make what is called

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called the digestive bread; but of course that is a mere matter of option with people who take such bread.

40. Is there any harm arising from the use of those powders?—The effect of the constant taking of tartrate of soda will be to act as a gentle laxative; it is a chemical imitation of fermentation; if the baking powder is mixed with flour and kneaded, effervescence succeeds and extends the dough; but the salt which is formed, the tartrate of soda, remains there; the effect is, that there is a gentle action upon the bowels; there is not the loss in fermentation, and it is used by preference. There is nothing in it I should say injurious to those who like that kind of bread. I have also examined the unfermented bread made with carbonate of soda and muriatic acid; on that point I would observe that a great deal of common muriatic acid which is sold for this purpose contains arsenic; if that kind of bread be used there ought to be some precaution taken that the acid sold is pure and not poisonous.

41. Mr. Moffatt.] In what proportion have you found that acid in a four-pound loaf?—Carbonate of soda is mixed with the flour, and the proportion of acid used ought to be just enough to be neutralized by the alkali, so that there should be no free acid; the effect of kneading in the muriatic acid with the flour and carbonate of soda is to produce the effervescence that I have described, and distend the dough; if the proportions have been rightly hit off we shall find that the bread will only contain common salt (muriate of soda), but if there were any arsenic mixed with that acid it will remain there, even though in small quantities. I have generally found that bread alkaline, and not acid, showing that a little excess of soda had been used.

42. Mr. Peacocke.] You said that your experiments have been generally made upon the bread sent to you for your own use?—Yes, or sent to me by friends, and also by gentlemen who fancied that they were made ill by the bread they used. I have often found that suspicion to be groundless. I have dealt with my own baker for 12 years.

43. Mr. Otway.] As regards the purity of flour, have you made many experiments upon it?—Not many; I do not think I have examined above six samples of flour. I have not sought out these matters purposely, but I have taken them as they came to me.

44. In the instance, however, to which you allude, you found the flour to be without any adulteration?—Quite so; and that analysis was made when the person sending the flour was not at all aware that it would be analysed.

45. A miller having a large business could derive a great profit from adulterating the flour with alum, could not he?—I think the object of putting in the alum would be rather to meet the wish of the baker; he might derive a considerable profit from it. I think, if I might be allowed to express an opinion, there may be a great deal of adulteration in respect to the introduction of bean flour and pea flour and lentil flour, which it would be difficult for a chemist to detect.

46. Mr. Moffatt.] Is there anything noxious in the character of that flour?—No.

47. I find it stated by one witness, "I did actually find in the bread alum, which was so badly and carelessly mixed as to be found in crystals the size of a large pea." Do you think that probable?—The gentleman who makes that statement says as a fact that he saw it; I never saw anything like it. I should imagine that the alum would be mixed with the flour and heated, and then it would be prevented, by the mere effect of baking, from re-crystalizing.

48. Is not it an ascertained fact in chemistry that alum when subjected to heat does pulverize?—It does; it gives off its water; the crystal is destroyed. I should think, therefore, that the crystal spoken of must have come there by some accident afterwards; the alum loses its water and falls to a white powder.

49. Chairman.] You have been asked whether you think that pea flour, or lentil flour, or bean flour, as mixed with wheat flour, is noxious; you say it is not; but I presume you would not imply by that that the mixture of pea and lentil flour is a justifiable thing?—Certainly not; I am rather stating here what has not come within my own observation as a matter of detection; it is what I hear as a matter of general information, that lentils, largely imported from the Levant, Grano-Turco as the Italians call it, are very much worked up in flour. A chemist would not discover that in burning the flour; he would only discover

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discover mineral matter; it would require a microscope to make out any impurity of that kind.

50. Have you made any observations upon yeast?—Yes; I have examined ordinary yeast and German yeast, but have not found anything of an injurious nature in either of them. German yeast appears to be pure yeast, inspissated and dried to prevent putrefaction, and unless it has putrefied, or is decomposed, there is no danger in the use of it. With respect to porter and ale, I have also examined them at various times, and I believe there is a great amount of adulteration carried on with regard to them, but not by the large brewers; I think it is done by the retail dealers, from what I have observed. Quassia, gentian, and many other bitter substances, and cocculus indicus, are much used. I was obliged to give up the retail London porter some years ago, in consequence of my own feelings as to the effects of cocculus indicus.

51. What are the effects of the mixture of cocculus indicus in beer?—They are of a very peculiar kind; not exactly amounting to intoxication, but they produce a kind of loss of power or tremulousness; a waking dreaminess, if I may so call it, as if you were conscious of things about you, with no power to move or exert yourself in any way. It seems to affect the nervous and muscular systems in that way.

52. Mr. Moffatt.] Have you analysed any porter for the purpose of seeing if it contains that drug?—We have no power to detect small quantities of cocculus indicus. I am told that the composition is put into porter in a bag and allowed to soak. In this kind of mixture a variety of things together most effectually prevents ordinary methods of detection.

53. Is it your impression that that practice is resorted to by the brewers?—Not by the brewers; I think it is by the publicans. They put in water and salt, and then in consequence of the reduction of the strength of the beer by the addition of the water, they give it an apparent intoxicating power by these drugs. I am sure by the taste, as well as the effects, that it is carried on to a very large extent.

54. And that is injurious to the health of the consumers?—It is undoubtedly if they should take it day by day. A case of the kind was referred to me by a surgeon practising in Parliament-street. There was no possibility of saying certainly that cocculus indicus was in the beer; but there was a large amount of bitter mixed with it, and a large amount of sugar, and from his description, and the fact that all who had it from a particular public-house complained of the same symptoms, I have no doubt in my own mind that there was a drugging of that liquid. At the same time, it was one that we could not establish by direct proof.

55. Mr. Corper.] Have you tested the effects of bottled beer as well as draught beer?—Yes, I have, both in reference to London and Dublin stout. I have not found any drugging when it has come from a good source. There has been bitterness, but nothing of an unwholesome nature.

56. To what would you attribute the superabundant bitterness?—Partly to a large quantity of caramel bitter, something in the nature of burnt sugar, and I believe in some instances to quassia.

57. Have you ever detected any strychnia?—No.

58. Have you tested for it?—I have occasionally. I do not think strychnia is put into beer. There are other bitters which can be so easily substituted for strychnia, which are perfectly safe, and which give a bitterness more palatable, for the bitter of strychnia is a most disagreeable bitter, that I do not see that any motive exists, independently of its non-detection by those who have sought for it.

59. Mr. Peacocke.] Quassia is not deleterious, is it?—No; it is a good tonic, only one objects to have medicines prescribed under the name of porter.

60. You said just now that beer was not adulterated by the brewers, but by the publicans; have you found any difference between those public-houses which are under the control of the great brewers, and others?—I have not made that comparison; but taking porter from such places as Barclay & Perkins, or Calvert's brewery, as I have had an opportunity of judging of both of them, I find nothing objectionable about the beer; but I have made no comparison between such beer and beer sold in public-houses under the control of brewers. I think, generally speaking, the porter sold in London is very much adulterated.



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61. Mr. *Moffatt*.] Have you given any attention to the ale sold in London?—Yes.

62. Do the same remarks apply to ale?—I think with regard to all the ordinary kinds of bitter ales, they are all bittered by something besides hops.

63. Mr. *Swift*.] Are you aware whether the quantity of *cocculus indicus* imported into this country in the course of the last few years has materially increased?—I am not aware of that. I should say it has been for years largely imported, and there is no honest or fair use of it, that I am aware of. It is not used in medicine, and the only use of it I know is as a poison to catch fish.

64. Do you know whether the price has been considerably advanced?—No.

65. Viscount *Goderich*.] It is not used in any kind of lawful manufacture, is it, that you are aware of?—I am not aware that it is.

66. Mr. *Sheridan*.] Would quassia be the cheapest ingredient to introduce to impart a bitterness to beer?—I think it would; quassia where it is used gives a very strong bitter; but at the same time, gentian and caramel would do so. The bitter of quassia is a rough sort of bitter; gentian and caramel would give more warmth to the bitter, and make it more palatable; grains of paradise and coriander seed and other materials are also used; many of them are not injurious, but they conceal the fact that the beer has been greatly lowered by the addition of water.

67. *Chairman*.] What is the object of putting in *cocculus indicus*?—The way I would explain it is this: supposing a barrel of strong beer is sold to a publican; he wishes to increase that by diluting it with water; he lowers the strength of it in alcohol; therefore he must put in some substitute to increase its apparent intoxicating qualities.

68. Mr. *Peacocke*.] You said just now that the only other use to which *cocculus indicus* is applied, is to catch fish; if any person eats those fish, will not it be very deleterious to him?—Not very deleterious; I am not aware of any accident having occurred from that cause; the quantity that would bring fish to the surface of the water would not be sufficient to be injurious; besides, we should always find it in the taste if there were a dangerous quantity.

69. Viscount *Goderich*.] You do not suppose that it is extensively used for the purpose of catching fish, do you?—No; I have heard that poachers so catch fish; I cannot conceive that *cocculus indicus* is imported for any fair and lawful purpose.

70. Mr. *Swift*.] You are not aware that it is used for any other purpose?—I am not.

71. *Chairman*.] Have you made any examination of port wines?—Yes; I have had some experience of that kind on the part of the London Docks Company. It appears that port wine is sometimes manufactured out of bad clarets and bad Italian red wines, bought at 7 *d.* a gallon; and then, by the addition of a mixture of *geropiga*, dried extract of elderberry juice, Lisbon grapes, brown sugar, brandy, bitter almonds, and logwood, a mixture is made up which is called London port.

72. Viscount *Goderich*.] Are any of those ingredients injurious, in your opinion?—None of them. But the wine I am speaking of was the subject of a trial at the Exchequer sittings in Guildhall last summer, in a case in which the London Dock Company had been subject to very great frauds in consequence of the substitution of good port wine for this bad material. That stuff was bought at 7 *d.* a gallon, and this wine was afterwards sold at from 12 *s.* to 15 *s.* a gallon, and the plaintiff in that case said he had a chemical mixture by which he could turn sour claret into very full-bodied port, and this was the substance which was supposed to be used.

73. Mr. *Peacocke*.] Have you detected those ingredients in English port wine by analysis?—I have detected brown sugar, and logwood, and brandy. I am taking this as a matter of evidence, which was given upon the trial; it came out upon the trial what was the nature of this mixture.

74. Mr. *Cowper*.] Is *geropiga* imported from Portugal?—It is, as well as made in this country; and some of it is added to the wine even in Portugal.

75. Is the manufacture of *geropiga* carried on in this country?—I should suppose it is.

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76. Mr. *Moffatt*.] Are you not aware that *geropiga* is added to almost all the wine of Oporto?—Yes, or brandy is, certainly.

77. Lord *C. Hamilton*.] Do you believe that when the cheap Italian wine comes in here it pays duty as wine?—No; this was what they called damaged wine, which the Dock Company, after it has been kept a certain time, sell at a low rate to make vinegar; it came out in this case that publicans bought it at 7 *d.* a gallon, made the mixture I have referred to, and sold it at from 12 *s.* to 15 *s.* a gallon.

78. If a person were medicinally ordered to drink port wine this mixture would not produce any of the effects intended by his medical adviser?—No; it would be an astringent tonic mixture, and not good port wine.

79. Mr. *Swift*.] Would it be injurious to health?—No; there is nothing there that I can describe as injurious to health.

80. *Chairman*.] Sour claret itself would not be a very wholesome beverage; would it?—No; but they neutralise that by some alkali. With respect to spirits, I have been consulted on them, and I believe that ordinary gin is much adulterated. I once had an application made to me on the part of a person to suggest some chemical ingredient to produce what is called the creaming of gin; he wished to know how much potash would do it. I declined to have anything to do with the matter, but it satisfied me that the system is carried on to a great extent.

81. Are you aware what the mixture is which is put into gin?—I have not made any special analysis to ascertain; acids, I believe, are used; but I am unable to give any further information as to the nature of the ingredients employed.

82. *Chairman*.] Have you not some evidence to give on the subject of London milk?—I have found no adulteration in London milk which we can speak of, except water.

83. Do you find that to abound?—Occasionally so. I have examined a great many samples; they differ a great deal in the amount of cream, and there is no doubt the milk is a little lowered with water; but I have not found anything objectionable, nor have I found in the cream those objectionable substances which have been mentioned; I believe occasionally flour is used, and the material is coloured a little with annatto, in order to give it a yellowish, creamy appearance; but I have not found anything of an injurious nature.

84. Have you turned your attention to coffee?—Yes, to chicory and coffee, both.

85. What is the result of your investigations?—I was consulted by the Government in 1853, along with Dr. Carpenter, in reference to the sale of coffee mixed with chicory, and the power of detecting the adulteration. We came to the conclusions which I may briefly state to the Committee. There was nothing in chicory which could affect health; we made every inquiry upon that point that was possible, and in certain proportions we found it was actually preferred by the consumers to coffee alone; that was the result of our inquiry; and further, we ascertained that there were proportions in which it might be used without materially affecting the qualities of the coffee, but when it came to be anything like 45 or 50 per cent. it gave a flavour which persons would detect, and many consider disagreeably bitter. These (*producing the same*) are some specimens which I prepared last year for the Committee, for the purpose of giving evidence with respect to the mixture of chicory with coffee. One of them is genuine coffee, one is genuine chicory, and the third a mixture of the two. The tendency of chicory being sold separately is to pass into a solid cake, which is owing to its consisting chiefly of burnt sugar. The analysis of a sample of chicory gave these results: solid part 22 per cent, and liquid or watery part 78 per cent. The solid part consisted of grape sugar, with a bitter principle, 14·28; insoluble fibre 5; mineral matter, consisting of carbonate of potash, common salt, phosphate of lime, and silica with a trace of iron, 2·72; so that chicory appears to be a root which contains a quantity of saccharine matter and a bitter principle, and when roasted, that saccharine matter being burnt, like burnt sugar gives a strong colour to any infusion, and the bitter principle at the same time is liked by many persons who thus take it. We found that up to 10 per cent. it was not very readily discovered by the flavour, but when it went beyond that it could easily be discovered. It was detected by the microscope and by chemistry in almost any per centage.

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86. Lord C. Hamilton.] Does the chicory assume this form of cake unless it has been rendered moist?—It does so spontaneously, by imbibing the moisture of the atmosphere.

87. You stated that you found a preference on the part of consumers for the mixture; was that exhibited when they had obtained pure coffee by their asking for chicory to mix with it?—Dr. Carpenter procured that evidence from some large wholesale houses in London and in Edinburgh. Dr. Carpenter found there was a great demand for a mixture of chicory and coffee in certain proportions, in preference to coffee. For my own part, I prefer coffee without chicory to any admixture of the two. The proportions Dr. Carpenter found on inquiry to be preferred were 10 ounces of coffee to 6 ounces of chicory; that we fixed on as the maximum admixture to be allowed by the law. The following questions were put to Dr. Carpenter and myself: "Whether chicory should be allowed to be sold mixed with coffee (ground with it) or in the unmixed state? Reasons for either or both views? If thus sold, can the proportion be limited in which the two bodies are mixed?" Our reply was as follows: "The grinding of the coffee berry and dried chicory root in the same mill ensures the most perfect mixture of the two powders. The sale of it in this state undoubtedly saves trouble to the public; and, for reasons which will be entered into hereafter, may enable the vendor to supply a better quality of coffee at a lower price. When chicory powder is sold in a separate state its qualities are, to a certain extent, affected by the rapid and abundant absorption of moisture. In order to retain it in a pulverulent form, it should be sold in tinfoil or in glass bottles; this adds to the expense of the article, and would render it inconvenient for use among the poor. On the other hand, we feel bound to state that when the chicory and coffee are allowed to be ground together, and sold in the mixed state, although a better keeping and cheaper article may thus be afforded to the public by honest dealers, there is nothing to prevent a dishonest man from mixing a very large proportion of chicory powder, say 75 per cent., with coffee, and charging a high coffee price. We know of no method by which the proportions of chicory and coffee can be limited if the sale of the mixture be allowed. It must depend on the conscientiousness of dealers and the discrimination of the public. We have the evidence of highly respectable dealers to the fact that when the permission to sell the mixture existed, if the proportions went beyond half and half, the poorest people complained, and nothing but necessity would ever induce persons to use chicory alone. The same dealers inform us that previous to the late Treasury order they sold to country dealers a great deal of ground mixed coffee at 10 d., both wholesale and retail. It was composed of 10 oz. good sweet coffee, costing 6 ½ d., and 6 oz. of English chicory, costing 1 d. This was found to keep perfectly well without caking. It was sold to retailers at 8 ½ d. per lb., and by them to the public at 10 d. We have made trials of the following mixtures, using powdered chicory as sold at 6 d. per lb. (packed in tinfoil), and Ceylon coffee at 1 s. 4 d. per lb.

	Chicory.	Coffee.
A. - - - -	1 - - - -	1
B. - - - -	1 - - - -	2
C. - - - -	1 - - - -	3
D. - - - -	1 - - - -	8

In A. B. C. the peculiar bitter of chicory was quite perceptible to the taste, especially in A. In D., but for the knowledge that it contained chicory, we should not have discovered it by the taste. It is obvious that there should be a difference in the retail price of such mixtures as A. B. and C., but we know of no method by which such a regulation can be enforced. It is easy enough, by the aid of chemistry and the microscope, to discover the presence of chicory in coffee, or of coffee in chicory, when the latter is fraudulently sold in the entire state as a mixture; but it is not possible by any process known to us to determine the proportions in which the two are mixed. The public can only be protected in such a case by their taste. The admixture of 50 per cent. of chicory would be disagreeable to most persons, and if it were considered advisable to impose any restrictions on the proportions, we would fix on the maximum admixture to be allowed by law as that above quoted from dealers who

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who have found a fair sale for the mixture, namely, 10 ounces of coffee to six ounces of chicory.

88-9. Did the dealers, in selling this mixture, state that it was a mixture, or did they only sell an article they called coffee at a cheap rate?—I believe before this Report was issued it was very much the custom to sell that mixture without stating that it was a mixture. Our Report led to an alteration in that respect on the part of the Government. We reported that within certain limits the mixture no doubt might be fairly sold, not being injurious to health, and being actually preferred by many persons, according to the evidence before us; but that the party purchasing should always be made fully aware of what he was buying.

90. How did the public show their preference for this mixture; did they say, "We prefer the flavour, and wish to have chicory mixed with the coffee"?—It was owing to this: it was possible to sell at 1 s. a lb. a better kind of coffee with a greater admixture of chicory than if they had bought the coffee separately without chicory; the latter would have been a poorer and worse kind of coffee; so that Messrs. Law, of Edinburgh, and some others, of whom we made particular inquiries, said they could afford to let poor people have a certain amount of very good coffee mixed with chicory at the same price at which they could sell them indifferent coffee.

91. That only tends to prove that they preferred the article they got, which was an admixture of a superior quality of coffee with chicory, to an inferior quality of coffee: can that show that the public, when they ask for coffee, like getting a mixed article?—No; and I think the mixture ought never to have been sold without their having had notice that there was chicory with it.

92. Mr. Otway.] Taking for granted that the vendors of this spurious article were animated by the desire you suppose, of giving a better coffee to the public, have you any reason to believe that the desire was carried into effect, and that in the mixed article the public really obtained a better coffee than they would otherwise have done?—Of course we could only take the information we received; we made every inquiry we could, to obtain a knowledge upon that point. I cannot say that they invariably sold that which they professed to do.

93. Mr. Swift.] You are yourself a drinker of pure coffee?—Yes, without chicory.

94. And you have drunk, of course, the mixture?—Yes.

95. Do not you think the flavour of coffee is very much improved by the introduction of chicory?—No, I do not; so that I avoid taking it.

96. But you think the public generally approve of the mixture?—I know that many of my friends have frequently contended with me that it was a very great improvement; I decidedly dissent from that. At the same time, I do not wish to interfere with other people's judgments. I think the bitter of chicory is very disagreeable.

97. But you do not think the admixture of the quantity here stated is injurious to health?—No.

98. Mr. Moffatt.] Are you aware whether it is the practice to mix chicory with coffee in France?—Universally, I believe, and in Belgium.

99. Coffee is much more largely used in France than in England?—Yes.

100. Lord C. Hamilton.] Are you aware that in France they do not often sell coffee in powder; you commonly see persons roasting their own coffee?—Yes.

101. Does not it follow that they mix the chicory themselves knowingly?—Yes.

102. That surely is a very different practice from asking for the coffee and having it mixed, not according to the proportions you suggest, but according to the peculiar interests of the vendor?—Yes.

103. You have stated that you should not like to have it sold, except in certain proportions you have named?—Certainly; not beyond the proportion of chicory mentioned in the Report.

104. You must be aware that before the late stir was made, and at a time when some people were saying that it was a great boon to the public to allow chicory to be mixed with coffee, the admixture was to the extent of 70 or 80 per cent.?—I have not seen such a mixture myself.

105. Have you heard that fact stated upon evidence which you thought credible?—Yes; I have no reason to doubt that it was the fact, from what was stated. In reference to our examination, we sent out on one occasion into the



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Strand and asked for coffee in a great many shops; in some of those cases there was chicory mixed with it, but in others we obtained genuine coffee; in fact, there was a very loose practice altogether.

106. *Chairman.*] What is the largest amount of adulteration which you yourself recollect to have detected?—As far as I can judge, I do not think I have ever met with a sample above 50 per cent.

107. *Lord C. Hamilton.*] How would you imagine it possible, if once you allow coffee to be so largely mixed with chicory, to obtain a sufficient security for the humbler classes?—It would be a very great difficulty, and it has always been so felt. I do not think we can make any nice distinction; we can only take them upon a large scale. It would be very difficult, for instance, to make a distinction between 20 and 25 per cent. We have not that nice means of distinguishing the proportions, and as to the power of mixing large quantities of chicory with coffee, we felt there was a difficulty. We saw no means of preventing the practice from being carried on to a larger extent than the law might permit.

108. Would not the inconvenience to the public of being subject to that fraud be greater than any convenience which might arise from relieving them of the trouble of buying the chicory and the coffee separately?—I have always understood from inquiry, that most persons would rather not have the trouble of mixing for themselves, but would prefer the mixture made for them.

109. But are you aware that in France the people grind their own coffee, and mix for themselves?—Certainly.

110. *Mr. Moffatt.*] You have stated that there is no safe test in regard to the quantity of chicory which may be mixed with the coffee; is not there this safe test, the taste of the buyer?—That is a very great test. I should say where the quantity of chicory amounted to 50 per cent., it would become decidedly disagreeable.

111. There is no Act of Parliament compelling a man to buy his coffee roasted, is there?—No.

112. If the coffee he buys at a shop does not please him he may go to another shop?—Yes. I am bound to say that I have had samples purchased as coffee since the order was issued, and I have not found any chicory mixed with them.

113. *Chairman.*] When you have asked for pure coffee?—Yes, when I have sent for it.

114. *Lord C. Hamilton.*] You say the taste of the purchaser would be a good test; is not it the case, even with the best coffee, that much of the flavour depends upon how it is made?—That is very true.

115. *Mr. Peacocke.*] Have you analysed coffee purchased in poor districts?—I have not.

116. Can you say generally, or not, whether the articles are more adulterated in the poorer districts?—I cannot; on the occasion of this inquiry we procured a great many samples, and we found, without reference to districts, there was a great mixture of chicory with the coffee.

117. Do you think other articles besides coffee are more adulterated in poorer districts?—I cannot say from actual experience.

118. *Chairman.*] Are you to be understood to say, that if the Government continued this plan of allowing the admixture of coffee and chicory it would be desirable to name the maximum quantity of chicory which should be allowed?—I think it would. The only other protection to the purchaser would be the taste.

119. *Lord C. Hamilton.*] The maximum you recommended was six pounds of chicory to 10 of coffee; you stated, just now, that it would not be easy to detect whether the proportion of chicory actually present was 20 or 25 per cent.?—I believe not.

120. Suppose you established a maximum, and imposed a fine upon those who exceeded the maximum, which would apply though there was only two or three per cent. over the maximum, would not the same difficulty arise which you have described in the case of the 20 and 25 per cent.?—No doubt.

121. Do not you think, therefore, that there would be a great difficulty in defining the maximum which might be allowed?—No doubt a very great difficulty.

122. Practically,

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122. Practically, is not it your opinion that if it is expedient for the Legislature to interfere to protect the humbler classes from this practice, it can only be done by having the two articles sold separately?—It would be so in the case of a dishonest dealer; and then the purchasers might mix in any proportions they pleased.

123. *Mr. Moffatt.*] Are you aware of the quantity in which coffee is bought by a large number of consumers?—No.

124. Are you aware that the great bulk of the coffee upon which duty is paid in this country is sold in ounces and half ounces?—I am aware that it is so in a retail shop.

125. Would it be practicable where coffee is sold in such small proportions to sell a certain quantity of chicory and a certain quantity of coffee to those poor people?—That is rather a question not so much connected with chemistry or science as expediency.

126. The examination has tended to what would be correct legislation in respect to the sale of coffee and chicory, and it has been suggested to you that the purchaser should buy the two articles separately, and mix for himself?—In treating this question for the inland revenue, we considered it would be, in many respects, a convenience for the poor, assuming they were honestly dealt with, that they should buy the mixture rather than that they should buy two separate parcels and then mix them.

127. *Mr. Otway.*] The poorer classes generally use sugar with their coffee, do not they?—Yes.

128. Do not they buy the sugar separately?—Yes.

129. *Mr. Moffatt.*] It has been given in evidence before this Committee, that in the year 1851 there was a report made to the then Chancellor of the Exchequer, that neither by chemistry, nor by any other means, was the admixture of coffee and chicory to be detected; your evidence seems to be directly contrary to that?—Our Report is dated in March 1853.

130. Have any new lights in science broken upon the article of chicory between 1851 and 1853?—I am not aware of it; chicory is very easily detected, and has been very easily detected for a long time.

131. *Chairman.*] Can it be detected by chemical means, or by the microscope?—By the microscope. I think there must be a great mistake in that evidence, because here (*producing the same*) is a Report by Dr. Lindley and Dr. Hooker, presented to the Government, in which the microscopical characters of chicory and coffee are given. A very simple test has been already mentioned before the Committee, namely, putting a small quantity in a glass of water; if there be any chicory in the coffee, even a small per centage, it falls through the water, and gives a brown colour, in a very few minutes, to a wine-glass of water; if the coffee be free from chicory, it remains for a long time without giving any colour to the water.

132. *Mr. Cowper.*] Is it your opinion that chicory has not the same nourishing qualities as coffee?—I do not think it has; chicory, if it has any property at all, is a bitter, and I think it would act as a slight purgative; but there is nothing of the nature of coffee about it.

133. I understood you to say that there was saccharine matter; is not that saccharine principle in it nourishing?—It is like burnt sugar or molasses, or any substance of that kind. There is just the little amount of nutriment which is contained in what is soluble out of the chicory.

134. It possesses none of the refreshing or invigorating qualities of coffee, does it?—No.

135. *Mr. Moffatt.*] The addition of 50 per cent. of chicory to coffee, which you think would be right, enables the fair dealer to supply the poorer classes with what they take as coffee at a much lower rate than they could otherwise buy it?—Yes.\*

136. There may be a decrease in price to the extent of 30 per cent. probably?—Yes; that is the result of the information that we obtained.

137. *Mr. Otway.*] It is considerably cheaper, is not it, than the cheapest coffee which can be sold?—Yes.

138. Then,

\* A mixture of 50 per cent. has not been advised; on the contrary, such a mixture has been objected to. See Questions 85, p. 9, and 87, p. 10. See also *post*, Question 140.

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138. Then, upon the understanding that this admixture would not be easily discoverable, suppose the maximum of chicory which you consider right to be exceeded, it is clear the seller might derive a very large profit from his dealings with the poor by exceeding that proportion?—Yes.

139. In fact, there is nothing to rely on but the honesty of the vendor?—Yes, and the taste of the public.

140. Mr. Moffatt.] What else have you to rely on in almost all the traffic which is being carried on?—If any vendor sought to sell coffee containing 50 per cent. of chicory, I think there would be a great objection to it, and it would not be a saleable mixture.

141. Is not the only safe and real protection to let the public take care of themselves in all such questions?—That is a question for the Committee to consider rather than for me.

142. Lord C. Hamilton.] Is not it the case that it was proved before the Commission which originated this inquiry, that those mixtures which were most largely adulterated had very beautiful Oriental names in order to deceive the public?—I do not know how that may be.

143. Mr. Otway.] Is not it rather an expensive process for a poor man to take care of himself, the only test being one of analysis, which is rather an expensive process?—Yes.

144. What would be the expense to a man of having a parcel of coffee analysed?—To a poor person one should charge, perhaps, half a guinea or a guinea. I think the great check possessed by a poor person would be his taste.

145. Mr. Otway.] Do you see any objection to selling the two articles separately beyond that of its inconvenience?—No; I see no other objection than that, the inconvenience. That was the chief argument that was used, that the mixture would always be ready for a person to use without the necessity of resorting to two parcels. Perhaps I may add, that among the questions proposed to Dr. Carpenter and myself was the following: "If coffee be sold mixed with chicory, can the proportion be limited in which the two bodies are mixed?" In answer to this question, it was stated, "That when chicory and coffee are allowed to be ground together and sold in the mixed state, although a better keeping and cheaper article may thus be afforded to the public by honest dealers, there is nothing to prevent a dishonest man from mixing a very large proportion of chicory powder (say 75 per cent.) with coffee and charging a high coffee price. We know of no method by which the proportions of chicory and coffee can be limited if the sale of the mixture be allowed; it must depend on the conscientiousness of dealers and the discrimination of the public. We have the evidence of highly respectable dealers to the fact, that when the permission to sell the mixture existed, if the proportions went beyond half and half the poorest people complained, and nothing but necessity would ever induce persons to use chicory alone."

146. Chairman.] Are there any other articles which you have had occasion to examine?—Yes; isinglass and gelatine I have had occasion to examine. I have examined most kinds of isinglass imported into this country from Russia and from the Brazils, and also the patent refined isinglass, as it is called, which is manufactured in this country, a pure kind of gelatine made from the skin of the ox and the calf. With respect to the isinglass from Russia, there is a great deal, or there was a great deal, I should say, for my researches extend to five or six years back, sold as best Russian, which was mixed with a large quantity of Brazilian isinglass. Brazilian isinglass differs from Russian isinglass in leaving an insoluble residue of nearly 20 to 25 per cent.; the very best Russian leaves perhaps two or three per cent., that residue being part of the albuminous membrane of the fish bladder. The Brazilian isinglass is chiefly used by brewers for refining beer and malt liquors of various kinds. There is a great difference in the price; taking the articles separately, the Brazilian sells for from 6 s. to 10 s. a pound; the best Russian sells for 15 s. Then with regard to gelatine, there is a very great difference in the quality of gelatine as it is found in the market. Here is some (*producing the same*), which is very like glue.

147. Viscount Goderich.] Do you consider gelatine to contain the same properties as isinglass?—The properties of isinglass as a nutritious article of food are owing to the gelatine which is in it. What is not gelatine is of no service. That albuminous part of the membrane which subsides is not gelatine: that

that which dissolves in water and forms jelly is the gelatine; so that whether it be from one variety of isinglass or another, the principle is the same all through.

148. Chairman.] From what is this gelatine principally made?—It is chiefly made from the skins of bullocks and calves. That is boiled up in water, and when properly made, without any chemical operation, it forms a very beautiful substance, of which this is a specimen (*producing the same*).

149. Mr. Moffatt.] Is that made in this country?—Yes.

150. Viscount Goderich.] That is for all purposes just as good as the isinglass derived from the fish?—Yes; in fact I prefer it. I have used it five or six years in preference to the isinglass derived from the fish bladder.

151. Do you know an article called patent refined isinglass?—Yes; that is it.

152. And that is considered to be as good as real isinglass?—Yes; it dissolves in water without leaving any residue.

153. Mr. Moffatt.] This patent isinglass is pure gelatine, while the isinglass which is imported from Russia and Brazil has always more or less of impurity?—With respect to the best Russian, the per centage of impurity is so small that we need not consider it. But this article is far superior to the bulk of that which is sold as isinglass in this country. We have in that patent isinglass a valuable article, which will in time supersede a very large part of the importation of isinglass from abroad; the gelatine, which is extracted by a simple process from Brazilian isinglass, is equally good; that is to say, by heating the isinglass with water, straining it, rolling it, and cutting it. Whatever the gelatine is derived from, whether it is from the bladder of the fish, or whatever it may be, the principle is the same.

154. What is the general character of the gelatine which is sold in this country?—The general character is that of an inferior article, and a great deal of it is unfit for food; when put into water and warmed there is a very offensive animal smell about it.

155. What do you suppose this to be made of?—It is made from skins, and it may be from the feet of animals; a great deal is brought from abroad, therefore we do not know what they put into it. In order to conceal the yellow colour they put a pink colouring.

156. Mr. Kinnaird.] From what country is it chiefly imported?—Chiefly from France; but a great deal is made in this country.

157. Lord C. Hamilton.] Would that answer the purpose for which isinglass is used?—No; it makes a very nauseous sort of jelly.

158. Is not there a mode of putting one layer of isinglass and two of this gelatine, which produces an article that passes in the market as isinglass?—Yes; it is no doubt a very great fraud; there is no doubt that bad gelatine is frequently in that way incorporated with good isinglass. There is a very cheap gelatine sold to the poor at about 6 s. to 8 s., or 10 s. per lb. But when you come to the higher qualities you must pay a large price, and that patent refined isinglass which I have placed before the Committee is, I think, 16 s. a lb., whereas the best isinglass is 18 s.

159. Viscount Goderich.] I understand you to say that you think the effect upon the human body of that patent refined isinglass is the same as that of the fish isinglass?—Yes; I have used it for some years myself.

160. You do not therefore agree with the opinion given by Dr. Letheby in contradiction to that; he says that he differs from Mr. Wallington, who had given evidence in favour of the patent refined isinglass, and that there is a great difference in respect to the price, and in respect of the taste of the article, and also a great deal of difference in respect of the action upon the human body; for instance, the flavour of ordinary gelatine is more like that of glue than real isinglass?—He is speaking of ordinary gelatine; wherever there is a yellow tint I should condemn it, but where it is white, such as that which I have placed before the Committee, it contains the pure gelatinous principle. A person buying 100 lbs. of it would buy 100 lbs. of the pure gelatine; whereas in buying 100 lbs. of Russian isinglass there would be at least 2 lbs. or 3 lbs. of residue, which no one will eat. In the Brazilian isinglass there would be 25 lbs. of such residue. The Brazilian isinglass is chiefly used by brewers for refining, and also by dishonest persons for mixing with the better qualities of Russian isinglass in order that it may be sold as good Russian isinglass.

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161. Mr. *Kinnaird*.] Have you any knowledge as to the amount of pure and impure gelatine used in France?—No; I have examined many samples of the French gelatine obtained from respectable dealers in England, and it has been a very improper kind for food; it has been in thin sheets, made thin to conceal the yellow colour; it looks as if it were very pure till you put it into warm water; it then settles into an offensive animal compound.

162. Dr. *Letheby* says that most of the gelatine coming from France, comes from a large horse slaughterer's near Montmartre; should you agree with that?—No; I know that there is a large horse slaughterer's there, but a horse skin is not fit for use for the purpose of making gelatine; I should think that what we receive would be much more impure than it is if it were so. If you put any sample of gelatine into a little warm water and let it settle into a viscid mass and take it out and smell it, you immediately find whether it is wholesome or not.

163. Mr. *Gregson*.] Do you mean to say that the common test of putting it into warm water is applicable to all these qualities?—It is, and you can tell the bad isinglass, because it has a fishy smell; in the common kinds of gelatine the liquid is overheated, so that it is partly decomposed, whereas in the manufacture of the better kinds of gelatine, as I have ascertained by the use of the thermometer, the heat rarely goes above 170° or 180°, so that it does not injure the cellular structure of the skin. Isinglass dissolves more readily, that is to say, treated under the same circumstances; but if gelatine be put into cold water, so as first to imbibe the water, it afterwards dissolves very readily in hot water.

164. Is this patent material which you are speaking of sold under the name of gelatine?—No, under the name of patent refined isinglass.

165. Is it isinglass?—No.

166. Then the title ought not to be given to it of isinglass?—It is not isinglass; when gelatine was first made in this country, a few years ago, it was made by means of chemicals; potash and other substances were used, and it was affected in its properties, and a nauseous compound being sold under that name, the public were disgusted at it; many are now averse to the very name of gelatine, though they are not aware that whatever is good in isinglass is really gelatine, and nothing else; I understand, however, that any attempts to sell this product as gelatine would fail, for the name would prevent its sale.

167. Lord *C. Hamilton*.] That is a prejudice which may pass away as people become informed as to the facts?—Yes; calf's-foot jelly is what we are all acquainted with; there are some persons who never use either gelatine or isinglass, but they have the calf's-foot and make the jelly at once.

168. Mr. *Gregson*.] Have you any idea what proportion the consumption of the best isinglass bears to the general consumption of this gelatine matter?—No; but the consumption of pure gelatine, and even impure, has increased of late years very much, and there is this difficulty, that so much isinglass is now mixed with gelatine, and the mixture is sold under the name of isinglass.

169. Do you know what quantity of foreign isinglass is imported?—No; there is a large amount comes from Russia, but I do not know the actual amount.

170. Mr. *Moffatt*.] Have you any evidence to give to the Committee in reference to the adulteration of vinegar?—I have made examinations of vinegar frequently, and, generally speaking, I have found what I should call an undue quantity of sulphuric acid. I have never made a quantitative analysis, having no object in it, but I saw by the effect of the tests that there was an undue proportion of sulphuric acid. One sample of vinegar I have examined having no sulphuric acid.

171. It has been given in evidence before this Committee that there was a large quantity found in vinegar; that in 28 samples only seven were free from adulteration, and that in seven out of the 28, oil of vitriol was present in immense quantities: are you cognizant of any such fact?—No; and I think it wrong to call that oil of vitriol. No person could drink oil of vitriol; it must be diluted; there may be one or two per cent. added as a maximum to give strong acidity, but you could hardly say that a person taking that would be taking oil of vitriol.

172. Mr. *Kinnaird*.] What would be the effect upon the human frame of two per

per cent. of sulphuric acid in the vinegar?—Where a person did not require it as a medicine, it would injure the stomach in time; it would have the effect of interfering with the proper digestion of food.

173. In the case of people who are in the habit of eating oysters, and of taking a great deal of vinegar with them, would it injure the stomach?—They must take a very large quantity, day by day, for that effect to follow.

174. Have you examined the vinegar used at the stalls in the streets, where oysters are sold?—I have not examined that vinegar; I have only examined what has been purchased as vinegar in the shops, and there I have found occasionally a large quantity of sulphuric acid; but the public are protected to a certain extent; for where sulphuric acid is found in enormous quantities, people could not drink it. I think, however, it is a point which decidedly requires the attention of the Committee.

175. Mr. *Gregson*.] Is there any easy mode for a consumer to detect it?—Only the disagreeably strong acid taste, with a sense of irritation about the teeth.

176. Lord *C. Hamilton*.] So that there would be to the consumer a very ready test in that way?—Where it was present in large quantities.

177. Is there any harm in the substitution of pyroligneous acid?—Pyroligneous acid when properly made would not be unwholesome, but often as distilled it contains other matters with it which are not proper to introduce day by day into the frame. You may obtain very good pyroligneous acid, but then it would be more expensive even than using vinegar.

178. It would be less injurious than sulphuric acid?—Certainly; I think pyroligneous acid is a great deal used.

179. Mr. *Kinnaird*.] Is sulphuric acid peculiarly injurious to the teeth?—Like all other mineral acids, in the act of swallowing, it acts upon the teeth.

180. Mr. *Moffatt*.] And produces a disagreeable sensation?—Yes; a sensation of very great sharpness.

181. *Chairman*.] Have you made any examination of drugs?—Very little. I have occasionally examined scammony; but not with any view to detect adulteration. Chemicals I have sometimes had to examine. In one town, I could obtain no muriatic acid which did not contain arsenic. There is a large quantity of sulphuric acid manufactured from iron pyrites, and that almost always contains arsenic, and of course the other acids which are made from that sulphuric acid are also impregnated with the arsenic; it is a very cheap acid, and people buy it for its cheapness. They may get it pure, if they please, but they too often buy that which is impure, and which contains arsenic.

182. Has your attention been directed to the question of what are commonly called quack medicines?—Yes; I have had several cases of that kind. Most of those pills which are sold, and are so largely used by the poor, contain very drastic purgative medicines, such as aloes, colocynth, and gamboge; and as they are manufactured on a large scale, it very often happens that the materials are not properly mixed, and in some quantities of them, there may be more gamboge; in others more aloes; and in others more colocynth; so that they occasionally act with great violence, and in weak constitutions have led to death by the violent cathartic effect they have had. I think, if it would not interfere too much with the liberty of the subject to prevent persons from taking what pills they please, some check upon them would be desirable. As at present used, they are used indiscriminately by all kinds of persons, and for all sorts of diseases; and for many of them they are decidedly prejudicial, leading, if not to death, at least to serious illness.

183. Are they now prescribed frequently by persons in the profession?—Not by the medical profession.

184. Any man may compound pills containing a mixture, whether he be in the profession or not, and therefore practise as a professional man by dosing Her Majesty's subjects with any materials he pleases?—Yes, by an exclusive sale of pills; it is with that view the medicines are sold.

185. A man cannot practise surgery or medicine without complying with certain formularies, can he?—He cannot practise medicine, but as a surgeon he may practise.

186. These persons may prescribe medicines without having any professional education or undergoing any professional examination?—Yes; they are both

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prescribers and compounders without being licensed; they make up pills by wholesale, and sell them to all persons who apply to them.

187. Mr. *Gregson*.] They do not prescribe at all, you say, but they sell a universal remedy for all diseases?—Yes.

188. *Chairman*.] Have you any general observations to make upon the subject of adulteration?—Adulteration may comprise, first, the admixture of noxious or unwholesome substances with articles of food. Now there I would beg to suggest that I have given several instances of that kind of adulteration especially; I have mentioned coloured confectionery as an unwholesome substance, and I have referred to many noxious substances, such as the oil of bitter almonds, and the almond flavour; and it would be a matter for consideration whether there should be a prohibition of the use or sale of these articles, except under close restrictions, and whether there should be some power to visit, inspect, and take samples for analysis, and a right of seizure of all noxious articles, and a fine if improperly used; that is based upon the French laws.

189. Does not the French law imprison a party in case of an offence?—I think the only punishment is a fine; they imprison only in case of the fine not being paid.

190. Lord *C. Hamilton*.] Is there a cumulative penalty for a second offence?—Yes. The second kind of adulteration relates to the admixture of articles which may not be noxious *per se*; and in this case the question of prohibition is one with which a chemist can hardly deal. There are many instances of that kind which I have adduced; for example, in the case of anchovies, oxide of iron is perfectly innocent; and grains of paradise, and ginger, and quassia, mixed in beer, have nothing unwholesome about them; but still it is giving a false character to the articles sold. Then comes a second point, that an article may be adulterated with something not injurious to health, for the purpose of increasing its sale. It might possibly be a consideration for the Committee, whether, if such articles are sold, there should not be some ticket or label on the article, to say what is mixed with it; for instance, in the case of anchovy sauce, it should be mentioned that there is oxide of iron in it. The third class of cases is this: it is one which it appears to me most difficult for a chemist to consider, or, in fact, for the law to deal with; it is that class of cases in which articles of food not necessarily injurious or unwholesome are sold as substitutes for others. I did not mention arrowroot in the course of my examination, but I have had, on several occasions, to examine arrowroot, when it has been mixed with potato starch and other kinds of arrowroot of inferior qualities. Within the last three days I made an examination of samples for a merchant in London, and what has been introduced as the best Bermuda arrowroot contains a quantity of Tahiti arrowroot. In fact, there is a very great admixture here; now, that is not unwholesome. As far as nutrition is concerned, the one is as good as the other; but I condemn the selling of one article under the name of another.

191. Is there any pecuniary benefit resulting from the substitution in that case?—Yes; one is much more valuable than the other.

192. Mr. *Kinnaird*.] The nutritive quality of arrowroot is very small, is not it?—In certain states of the body it is well fitted for bringing up the strength of the body when stronger food cannot be digested.

193. Mr. *Moffatt*.] You say that the mixture of those two arrowroots must be for the purpose of fraud; I will put to you the case that the pure arrowroot being sold at 5 s. a lb., the mixture containing Tahiti arrowroot of an inferior quality is sold at 3 s. a lb., where is the fraud in that case?—That is a question which the Committee must consider.

194. Have you any experience as to the price of arrowroot?—No.

195. Are you aware that the arrowroot containing the inferior compounds has been sold at the same price as the best arrowroot?—The samples which were sent to me were sent to report upon as to whether they were genuine, and which was the better. That led me to an examination, and undoubtedly there was in that arrowroot a very great mixture.

196. Do you speak with confidence that there is no difference in the nutritive qualities of those two kinds of arrowroot?—I am not aware of any difference. I should regard it in this light: there are in vegetable substances gum, sugar, and

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and starch. Starch is starch; it is a mere matter of opinion as to whether one kind is not better than another; but I know of no medical fact whatever which should lead arrowroot to be considered so much better than many other starches, provided those starches are themselves wholesome or good.

197. Lord *C. Hamilton*.] Do you think that pure arrowroot is sold at an undue price in relation to its superiority over other kinds of starch?—I think there is a kind of prejudice in favour of Bermuda and West India arrowroots, though other kinds may be equally good. My opinion, as a chemist, is, that starch, whatever its nature, whether from the tuber of the potato, or from the tuber of the arrowroot, is equally wholesome. With regard to the cases in which articles of food, not necessarily injurious, are sold as substitutes for others, which would embrace a large number of articles, there is a great difficulty in dealing with them. For example, I have had to examine the manufacture of candles to a large extent. A large quantity of candles are now manufactured and sold as sperm and wax, which are not sperm and wax. Stearic acid is used; it is an admirable manufacture, and they are excellent candles; but they are sold under a name which does not belong to them, and then, to give them the appearance of wax, they are coloured with yellow colouring matter, but unless sold as wax or sperm, they would not meet with a ready market. That is very analogous to some other cases, such as mixing chicory and coffee, and arrowroot and starch; there being nothing particularly unwholesome in these mixtures, and yet it may be that the public do not get the full benefit of what they pay for.

198. Mr. *Gregson*.] Is not the stearic acid injurious?—No; stearic acid is a compound very analogous to wax, and has no injurious property about it.

199. Mr. *Villiers*.] What do you mean by this being difficult to deal with?—It is a question how they can be comprehended under any of the prohibitions we have been considering.

200. It is easy to ascertain whether the fraud has been practised, is it not?—Certainly; it is only that it would require a very large survey of the whole of the trade. I am very frequently consulted in commercial matters. Some years ago I had to investigate this fraud. A cargo of indigo, it was said, had been shipped from Singapore; it came into the port of London, and there was then a dispute between the persons to whom the indigo was consigned and the shippers as to whether it was indigo or not. They brought it to me, and upon examining some of the pieces I found indigo, and upon examining others, Prussian blue. Prussian blue was then known to be cheaper than indigo, and it was a question whether the Chinese merchants had not fraudulently sent that material instead of indigo. Upon making a minute examination, it turned out that they were masses of Prussian blue which had been coated with indigo, so that the centres of the lumps were Prussian blue, while the outsides were indigo.

201. That was not easily detected; it was only detected by referring it to a person of your experience?—Just so; you could not have detected it from the appearance of the article. Upon my report, the difference of value was immediately paid. I at once showed the parties what the difference was. Heating the material over a candle in a silver spoon at once settled the difference; indigo is volatile with a purple colour, while Prussian blue turns brown without any volatility at all.

202. Mr. *Sheridan*.] Are the candles you have spoken of sold at a cheaper rate than the candles they are intended to represent?—Yes; we get by the stearic candle manufacture excellent candles, at a cheap rate, equal to wax.

203. Do you draw the attention of the Committee to that as a fraud?—No; only they are sold under the name of wax and sperm candles when they are, in reality, another substance.

204. They would not be able to sell wax candles at the rate at which they sell the candles you speak of?—No.

205. Lord *C. Hamilton*.] Do you imagine that the assumption of a name which does not properly belong to them increases their price?—I can hardly say that, because I do not know what the price is. I think the public have a considerable benefit in them; they are almost equal to wax in regard to light and burning, and they are cheaper than wax.

206. Mr. *Kinnaird*.] Have those candles no proper name?—Price's composition candles are one kind, and there are others manufactured at the Fair-  
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field Works, near Bow. There are many called Ceylon wax; patent wax and patent sperm, which I know are in a great part composed of stearic acid. With regard to scientific matters, as the case at present stands, suppose there is any impurity which is complained of; it is undoubtedly costly for any poor person to come to a chemist to have it investigated, for even a very simple matter may occupy half a day, or longer. The misfortune of the present state of things is this, that it is quite easy to find a chemist who will take an opposite view, and assert that there is no adulteration; there is often very conflicting evidence in such cases, and supposing it is alleged that a certain article has been adulterated, persons may come forward and say it is genuine. I have known that contest with regard to flour, where bone earth had been alleged to be mixed with it. Now, bone earth is phosphate of lime, and all corn contains it. Therefore there is this misfortune, that a magistrate has to decide upon a conflict of testimony, and the case falls to the ground. A case occurred to me some years ago, in which a gentleman, a respectable solicitor, who told me he was concerned for a country brewery, called upon me, and requested I would go down to defend a case against the Excise, chemically, in regard to the adulteration of beer. I inquired of him what the nature of it was; he had Bradshaw's Railway-book all ready for me to go immediately, without letting me know the particulars of the case. On inquiry I found it was this: a very large quantity of copperas, or sulphate of iron, had been seized upon the premises of his client, and he had read in my book on Poisons, that it was not an active poison, and he presumed I should be able to give evidence that there was no harm in putting the copperas into the beer. I immediately told him I quite disagreed from that view, and though there might be no harm in a man swallowing half a pint of beer with copperas in it, yet taking that day by day was a great imposition, and would in the end damage the health. I mention this to show that there is at present a kind of protection for adulterations of this description. I believe that gentleman found the means of defending his case afterwards, and it is very easy to do so without imputing a want of conscientious motives; one chemist may take the view that the substance is not injurious, and another may think it is: and as to the small quantities which may be contained in substances which are consumed for food, the question is, not whether there is enough to kill a man outright, but whether the constant and daily use of such substances over a long period may not seriously affect his health.

207. Mr. Villiers.] There cannot be a question between two chemists as to the presence or absence of such injurious substances, can there?—No, not as to their presence; at least there ought not to be; but there may be a dispute as to their properties. With respect to chicory, I see that oxide of iron is set down as very frequently added to chicory. Now it must be remembered that chicory is ground in the midst of stone cylinders, and in the midst of a large quantity of rusty iron, and all the chicory root yields oxide of iron. When chicory is roasted, losing 78 per cent. of water, the roasted chicory contains five times as much of the iron, silica, and lime as the fresh root originally contained. So that it is very desirable to know what the original constitution of a substance is, before we say that such matters have been fraudulently added. I can see no object in adding oxide of iron; it is perfectly insoluble, and it would have no effect except that of giving a little rusty colour.

208. Chairman.] Are you now endeavouring to satisfy the Committee that a really high standard of chemical examination would be required for the detection of these adulterations?—I do not say so much a high standard, as a careful examination, and we should especially distinguish between adulterations and accidental impurities. There are many accidental impurities which we meet with in all articles of food, which cannot be set down as adulterations. So with regard to medicines. It is very easy, by a general analysis, to determine what is present, and to say whether there is an undue proportion or not.

209. Are there any remedies for the existing evils which you have to suggest?—I have rather sought to suggest to the Committee that there are these three cases: the admixture of noxious substances injurious to health, which I think decidedly should be prevented; the admixture of substances not noxious, which is done in order to attract attention, and lead to an increased sale of the articles; and lastly, the admixture of substances almost all equally wholesome as those with which they are mixed, but inferior in quality and price, perhaps, and

and that is a point of course for the Committee to deal with. There are many things now sold in this country under a name which does not really belong to them.

210. Mr. Kinnaird.] You think that whenever a substance is mixed with others, and is not what it purports to be, it should be made public that it is not a genuine, but a mixed article?—That would be fair to the public, but the great point is to look to the wholesomeness of the article. Supposing, for example, it were prohibited to mix isinglass with gelatine; there are some kinds of gelatine infinitely superior to many kinds of isinglass. Patent refined isinglass is better than any Brazilian and a great many varieties of Russian isinglass; therefore if the Committee were to license the sale only of isinglass, and to put down that of gelatine, it would be putting down the most nutritious article, while it would be giving a preference to some varieties which are not fit for food.

211. Viscount Goderich.] Do you think that gelatine should be sold under the name of isinglass?—No; I think things should be sold under their correct names.

212. Mr. Villiers.] You think it the safest course for the community that they should be so?—It is the safe and honest course.

213. Have you any suggestion to make for ensuring that object; do you think if there were some public officer appointed, to whom such matters could be referred, and who was competent by experience and knowledge to determine them, it would have a sufficient influence over the trade to induce them to act honestly and fairly in such cases?—I think so; and it would be an excellent step to take. Unfortunately, scientific men are often unconsciously biased by the parties who apply to them, and it is difficult to get at the truth. I think a Board for such a purpose should be constituted; it might be of five or more persons; one person would never do, it requires a knowledge of chemistry, of botany, and of natural history; the Board should be constituted of men of competency in different departments; and that Board being associated with the Inland Revenue, or any other public Board, if articles were referred to them, and a decision taken upon their analysis, it would not only benefit the public, but put down a great deal of adulteration.

214. Are the Committee to understand that you think no one analytical chemist could decide upon a variety of different articles?—I do not think he could; as a chemist he could, but the microscope is required, and further than that, a knowledge of botany in many cases.

215. With respect to a public officer, do not you conceive for all the purposes of the necessities of life, and with a view to prevent their being adulterated, some chemist paid by the State in any given district would be sufficient, if there were the power to refer all those things to him, to prevent frauds?—I think it would be far better to have one competent Board for the whole country.

216. With respect to the facility of access, and enabling the poor to take the things they buy at shops, and submit them, upon any given occasion, to analysis, a single chemist in a district must be of much more ready access than a Board for the whole country could be?—I think there would be a great difficulty in finding competent men for all districts, so few persons have devoted themselves to these researches; a staff of men might be formed in time, but at present there would be great difficulty.

217. How could the Board which you propose act at all as a check in a village, or in a distant place, upon these frauds?—There would undoubtedly be a difficulty; but I think it would be a far greater satisfaction to the public mind that the adulteration of any particular article should be certified by five men of competence and standing than that it should be certified by one. I think men living in local districts might be open to influences which might lead, unjustly perhaps, to suspicion.

218. Chairman.] Might there not be a public officer in a provincial town, to whom the poor person should have immediate access, and who might forward the articles complained of to a central Board, where they might be tested and reported on, and the matter determined, without any expense to the poor man?—I believe no report of any single analyst would satisfy the public; I think it would rather be the united opinion of at least five persons of competency and trust which would alone satisfy the public.

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219. Mr.

Professor \*  
A. S. Taylor.

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\* Professor  
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219. Mr. *Villiers*.] You agree in the principle that there should be such a body in the country?—Yes.

220. Mr. *Otway*.] You have frequently at present sent up to you by railway every part of the human frame for examination, have not you?—Yes.

221. Could not a parcel of adulterated coffee, or any other substance, be sent up to the central Board, to be reported on in the same way?—Certainly. I think four or five persons might give satisfaction; but I do not believe one would.

222. Lord C. *Hamilton*.] Do you think any Board which could be constituted as a Board of Appeal, looking to the great advance which chemistry has made within the last few years, could long maintain the influence with which you propose to invest them?—I think they ought to be replaced by others as soon as they showed themselves incompetent.

223. You have stated our difficulty to be that you can always get another chemist to give an opposite opinion to that which one chemist may have given?—A plaintiff will probably go to 20 chemists, and out of them all he may easily find one to meet his views, and the defendant may do the same. I think if there were four or five men known to the public as competent and honest-dealing men appointed,—if a sample of coffee, said to be adulterated, were put into the hands of such a body, though the opinion of one might be open to suspicion, the opinion of the five would not.

224. Mr. *Peacock*.] Are there the materials for such a Board in many country towns?—There are some very excellent chemists in many country towns, but I consider it would be difficult to find such men in villages.

225. Do you believe that in most county towns there are the materials for forming an analytical Board?—In many there are; in all the large capitals there are, undoubtedly. There are some county towns I could name where I do not think there are; and I form a judgment upon that subject from the circumstance of having their analyses referred to me.

226. Do you think the poor-law union doctor is capable, generally speaking, of making analyses?—I do not think he is.

227. Mr. *Villiers*.] Do you consider, from your experience, that these adulterations extend so far as to be considered prejudicial to the public health?—I think they do. I think there is a great amount of them; and many of the obscure diseases the lower class suffers from, I think, may be fairly traceable to the improper food they take, and to the adulterations of food. I think it has been exaggerated, and that there has been a great outcry and more complaint than is justifiable by the facts; but at the same time, there is no doubt among the poorer classes that a great amount of disease may be ascribed to improper food.

228. Lord C. *Hamilton*.] Do not you think that the very outcry you have described has already removed some of the abuses which have existed?—I think it has; in the case of pickles and confectionery to a certain extent it has.

229. Mr. *Otway*.] Do you think much benefit would arise from the suggestion which has been made of publishing the names of all tradesmen in all parts of the country who have been convicted by the central Board of selling adulterated articles?—I think so; it has been done in France.

230. In France they entirely prohibit the sale of certain articles of an injurious quality, do not they?—Yes, they do.

231. Mr. *Kinnaird*.] As far as your experience goes, do you think this evil of adulteration has been on the increase during the last few years?—I think it has been, till inquired into by the Committee.

232. Do you consider it has arisen from increased competition?—I think it has arisen, in a great measure, from the desire to sell articles at a low price.

233. Mr. *Moffatt*.] So that the public have got, in fact, an inferior article at a less price?—Yes.

234. Did I rightly understand you to say that you recommended a system of inspection throughout the kingdom?—No; what I say is this, I think what would meet the present difficulty, and perhaps ultimately do away with the necessity for frequent inquiries and analyses, is the constitution of a competent Board of five or six persons possessing various information; and that all articles which are sent for examination should be examined under their superintendence, and certified accordingly.

235. Mr.

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A. S. Taylor.

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235. Mr. *Gregson*.] Under your first head of noxious and unwholesome articles you proposed as a remedy to inspect and examine; have you not already the power to inspect and examine every shop?—Upon purchasing articles you can examine them, of course. My suggestion was rather taken from the French rule, which I will, on a future day, lay before the Committee. Certain officers in France can go officially into a shop, and demand articles which they suspect to be adulterated.

236. Is it not better that persons should go in without authority, and purchase articles which may be examined?—It may be better; at the same time you are aware that excise officers often pay a sudden and unexpected visit, and lay their hands upon any article without asking permission. If a person went into a shop for a certain article, there might be a suspicion on the part of the dealer, and he might be told, "We cannot sell this to you," or "We have not got it."

237. Mr. *Peacocke*.] Do you propose that the members of this Board should have fixed salaries, or that a payment should be made to them upon each of the articles which might be sent up to them?—I think it better that there should be a fixed salary.

238. If an Act was passed for this purpose, do not you think that at first there would be such a quantity of articles sent up for inspection that a single Board could not fulfil the duties?—Supposing a Board of five persons were appointed, a great deal might be done for them by the assistance of others; they might not personally go through every manipulation themselves.

239. Do you think they could superintend the analysis of all the articles which might be sent up to them?—I think they might do so.

240. You would probably think that any prosecution that might be carried on should be at the public expense?—Yes; and we should remove as far as possible the idea that might exist among dealers that they were condemned by the voice of one man, and that, perhaps, a neighbour living in their own district.

241. Mr. *Moffatt*.] Would not it happen that a person who adulterated his goods, would take care to sell some which were pure, and that he would get a friend to buy some, which would be sent up for examination, and upon which he would obtain a certificate that his goods were pure?—Yes; I am afraid that that is a good deal done now.

242. *Chairman*.] There is no good without its abuse, of course?—No; I am afraid, with respect to many articles which are analysed for certificate, there is this serious objection, namely, that a good article may be produced expressly for a chemist to analyse and report on, while there is no guarantee, except the honesty of the party, that he will go on dealing in such good articles, so that a certificate may not always secure to the purchaser that he will receive the same description of article as that which has been actually analysed.

243. Viscount *Goderich*.] If an article were sent up to you to examine, and you found it pure, the certificate you would give would apply simply to the purity of that single article?—Yes, of course.

244. It would not certify the purity of any other article?—No; and generally speaking, if I have been called to analyse and report upon an article, I have confined my report to this, that the article I have examined, or that the sample forwarded, possessed such and such properties.

245. Mr. *Moffatt*.] It would have this effect with the public, would not it, that if any article which he was selling had been tested by this great central Board, and had been found pure, he would parade that fact, and it might lead to the public entertaining a general confidence in him that all the articles which he sold were pure?—That might be so.

246. Mr. *Villiers*.] The tradesman would be always liable to have other articles sent up to be examined, and one detection of adulteration would probably ruin him?—Unquestionably.

247. Do you think the results of detection would be sufficient without there being a fine or some other punishment inflicted?—I think the plan of the French Government might be adopted with respect to that; that is, fine or imprisonment; from 12 s. to 24 l. is the amount of the fine in France.

248. Mr. *Moffatt*.] Have you any information to give the Committee respecting the adulteration of tea?—No; I have not examined that particular article.

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Mr. James Abbiss, called in; and Examined.

Mr. J. Abbiss.

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249. *Chairman.*] YOU are, or have been, engaged in the grocery trade?—I am engaged in the trade now, wholesale and retail.

250. You are desirous, I believe, of giving some information to the Committee on the subject of what has been called the adulteration of coffee, tea, and other articles of grocery?—Having been connected for more than 20 years with the trade, and having heard the evidence which has been given before this Committee, I, as a practical man, entirely demur to the statements as to the extent to which adulteration is said to exist in the articles of tea and sugar, and one or two other articles connected with the trade. With respect to coffee, when I come to speak of that, it will be a question whether chicory is to be considered an adulteration.

251. Do you think tea is generally pure?—My impression is that black tea is generally pure. During the whole course of my trade I have never met with an instance of exhausted tea leaves, leaves of the birch, plane, bastard plane, poplar, or any of those leaves which are stated by former witnesses to be manufactured and mixed with tea. On Friday last a young man called at my counting-house and said, that seeing I was selling tea at a low price, he thought he had an article that would suit me; I asked him what house he represented. He said, "That is not material; I have a low priced tea, and shall be glad to sell it you." I told him I should be glad to know who I was dealing with. He produced a sample. I smelt it, and said, "This is kiln-dried tea." He said, "No, it is not." I said, "You must excuse me, I am sure it is kiln-dried or redried tea." He said, "It is redried tea, it has had but one water upon it, I believe; I have seen some statements in the paper that exhausted tea leaves have been manufactured and sold as tea, and I have tried to do it, and I can sell this at 1s. 6d. a lb." I said, "That will not suit me." He said, "I have had 1s. a lb. offered for it, and I should be glad to sell it at 1s. 6d." I asked him how much he had; he said, "About 6 lbs." I asked him the quantity he was able to produce; he said, "He could produce about four or five pounds a week, if he could get 1s. 6d. for it, but if he could get 1s. only, it would not pay him to do so. After an experience of more than 20 years, that is the only case of spurious tea which ever came under my notice. I cannot but think, therefore, that the cases which have been brought before the Committee are exceptional cases, sought out for the purpose of supporting fictitious statements.

252. You do not believe that there are any shops at which this pretended tea is sold?—I do not.

253. You make a distinction apparently between black and green tea?—Green tea comes to this country in a faced state, that is to say, the Chinese use some facing to make the green tea appear brighter than it otherwise would do; but I do not think that the public or the Committee could look upon that as an adulteration.

254. With what is it faced?—With Prussian blue, I believe, and French chalk.

255. Are they harmless materials?—I am not a medical man, but I should imagine they are both harmless.

256. Mr. Villiers.] Did you say that you had never heard of adulterated tea for 20 years?—I have never had a sample come under my notice. Ten or 15 years ago there were several cargoes of tea that were wrecked. They were allowed to come into the Port of London, and the Customs, I believe, allowed the underwriters to make the best use of them they could. Some were kiln-dried in the docks and sold at a reduced price, but it was genuine tea. The adulteration, or rather impurity, consisted only in the tea having been saturated with salt water; the water was dried out of it.

257. You adhere to what you said before, that you have never seen or heard of adulterated tea in this country, except in the instance which you mention, which occurred the other day?—It has not come under my observation. I have heard, and it has been given in evidence by a gentleman from the Excise, that some years ago there was a manufactory existing somewhere in the Minorities, I believe, for the purpose of manufacturing English tea, but the Excise found it

it out, and it was done away with. The tea was confiscated, and nothing of the kind has been since in existence.

258. Mr. Moffatt.] Although a patent had been taken out for the making of that tea?—Precisely so.

259. Mr. Villiers.] I understand you to consider that one vendor's tea is as good as another's; that is, that the tea is generally pure?—It is generally pure.

260. You may rely upon the purity of tea wherever you buy it?—Yes, upon the purity of tea; there is, of course, a vast difference in the quality.

261. Mr. Gregson.] How many years have you been in business?—Twenty-one years in Gracechurch-street.

262. And you never met with a package of adulterated tea?—Never.

263. Mr. Kinnaird.] You said you had either heard or read the evidence given here?—I have.

264. Did you not hear it stated in evidence, that the Chinese are in the habit of adulterating tea?—I have heard it stated in evidence that they do.

265. What steps do you take on opening a chest of tea, to ascertain that it is not an adulterated article?—I believe the adulteration by the introduction of spurious leaves is so rare, that it would not be found to be the case with one chest in a thousand. I never met with one which was so.

266. You therefore take no steps to ascertain the fact?—We test our tea in a small pot before we buy it, and before we sell it.

267. And you say you never found any adulteration in any samples of tea you have purchased or retailed?—I never found any adulteration.

268. Mr. Villiers.] Does that extend to tea upon its being imported; have you any means of detecting adulterations of tea which may have taken place in China?—Only by tasting.

269. Can you, by tasting, distinguish pure tea from tea adulterated in China?—I believe if adulterated tea were placed before me I could detect it immediately.

270. Are you aware of teas notoriously adulterated in China, and sent here, called lie teas?—That is green tea; I have seen it, and have refused it.

271. That is adulterated tea, is not it?—It is to this extent; I believe gunpowder tea is imitated by the dust of the tea or small leaves being manipulated with gum, and therefore that is gum and tea; but I have never discovered that there is anything but the tea and the gum.

272. Should you refuse that tea?—I would, and so would any man who knew his trade.

273. Is any of that tea imported now?—I believe not; a large quantity was imported, but it was found not to be suitable to this market; the merchants lost a large sum of money by it, and left it off.

274. Viscount Goderich.] You spoke of tea being faced with Prussian blue and other matters; do you consider that to be adulterated tea?—That is done by the Chinese as a rule. As a proof of that, if you take any green tea of the finest description, and break the leaf, you will see that the inside of the leaf is of a less bright hue than the outside.

275. Then when you speak of not having detected any adulteration in tea imported from China, you do not mean to allude to that practice of facing?—No.

276. Mr. Sheridan.] What is the test you always apply in purchasing tea?—Simply the taste of the infusion; I pour boiling water upon it, and let it stand a certain length of time, and taste it.

277. How would you detect the glazed article?—That you can detect by the eye; that does not require any tasting.

278. Mr. Peacocke.] Are you not aware that seizures of pretended tea have been made by the Excise?—I am aware of it, but that was some years ago.

279. It came under your attention then?—I said nothing was ever offered to me since I have been in business; and I believe that the cases which have been cited here are exceptional cases, and not the rule; the adulteration of tea exists to scarcely an appreciable extent in this country.

280. Mr. Villiers.] You have not, I understand, made any experiments yourself, or tried to ascertain the fact, whether tea is generally adulterated or not; you only speak from your personal experience?—I speak from my personal experience as a trader of 20 years' standing, and having a very great extent of communication with traders both in London and in the country.



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281. You receive pure teas yourself and sell pure teas, but you do not know what is the practice in other places where tea is sold?—I assume that if it were a general practice, in the course of 20 years I must have had this spurious tea offered to me.

282. Perhaps persons are known in the trade as being likely to take spurious teas, and some are known as not being likely to receive them?—I should think I should have been very likely to have had them offered to me, inasmuch as I sell a low priced tea; I am selling tea at 2s. 10d. a pound; I should have thought therefore I was just the person to whom such tea would be offered; I have made some extensive inquiries among persons residing in all parts of the town, and in many parts of the country, and they unanimously agree that the cases are exceptional cases, and as a rule they do not exist.

283. Are those persons in the same trade as yourself?—They are.

284. Mr. Peacocke.] The only test to which you have subjected your teas, is that of taste?—That is all; I might go as far as to say, I would challenge the whole of the former witnesses to purchase 20 lbs. of adulterated tea in the whole of London.

285. Mr. Gregson.] Do you buy upon your own taste, or the taste of others?—Upon my own taste.

286. Mr. Peacocke.] Have you ever asked any analytical chemist whether it is possible to detect adulteration by taste?—I have not. I believe that the cases which have been brought before the Committee are isolated cases; cases attempted to be got up. Dr. Normandy having stated that adulteration generally existed in one article, subsequently admitted that he went to his chemist and inquired where he was likely to meet with the adulterated article.

287. Viscount Goderich.] You purchase your tea, of course, wholesale; is not it most likely that it is the small retail dealers who sell sloe leaves and such things, if such things are sold; and that it is highly probable that the practice may go on without such articles being offered to you?—It being known that I supply small shops to a large extent, I think I should have had them offered to me.

288. Lord C. Hamilton.] Have you always dealt in the lower priced teas to a great amount?—Since the alteration of the duties I have.

289. How soon was it after you first changed your practice, and adopted the sale of the cheap kinds of tea, that this offer was made to which you refer?—It has been only made once, and that was Friday in last week.

290. Mr. Gregson.] Do you sell tea by retail?—I do.

291. Chairman.] What is the next article of which you wish to speak?—The next article is sugar. A previous witness assumed that there was 10 per cent. of adulteration in sugar, and that if that adulteration could be prohibited, and that 10 per cent. of extra sugar could be sold, it would yield a revenue of 300,000 l. a year. Now I contend that there is no adulteration in sugar. It never came under my notice, though I have made extensive inquiries on the subject. I believe, therefore, that the assumption of 10 per cent. of adulteration only exists in the brain of the gentleman who gave that evidence.

292. You mean to say that there is no adulteration of sugar to any extent?—I do.

293. Mr. Peacocke.] To what test have you subjected the sugar?—In the evidence which has been given it is not positively stated what is the adulteration which exists in sugar. One of the witnesses said that animalcules of some kind are found in nearly every hogshead of sugar.

294. Have you subjected sugar to any analysis excepting that of your taste?—No.

295. Lord C. Hamilton.] What is the exact meaning which you attach to the word "adulteration"?—I should say, for example, that a person mixing ground rice with pepper adulterated it; or that a person using flour, or anything that would deteriorate the quality of sugar, would adulterate it.

296. The mixing of any extraneous article to increase the bulk and the weight you would consider an adulteration?—Yes, except in the case of chicory; I make an exception in that case.

297. Viscount Goderich.] You have said that you did not think that tea is adulterated because you had never had any adulterated tea offered you; is it upon the same ground you think that sugar is not adulterated, or is it a mere matter of your own opinion and the result of what you have heard from others?—It

—It is a matter of fact and experience. Most of the grocers have their sugar come in in hogsheads or in bags, and, with the exception of animalcules which exist in nearly all raw sugars, I have never heard, though I have made extensive inquiries, that an adulteration of 10 per cent. existed.

298. Your evidence in this respect is a matter of hearsay with regard to sugar?—Yes, and of practical knowledge myself.

299. Chairman.] It is stated that there is grape sugar frequently to be found in sugar?—I do not know what it is.

300. One of the witnesses stated that grape sugar had been found in 36 samples of sugar?—That is a positive proof, I think, that it must be an article found in the sugar itself.

301. What is the next article you wish to remark on?—Nutmegs. It was stated that wild nutmegs are invariably sold at shops for cultivated nutmegs, and the public who buy them in small quantities have very seldom an opportunity of knowing what is true and what is false. I have here samples of wild nutmegs and of cultivated nutmegs (*producing the same*). I think any one would be able to distinguish between them. I went to the largest spice dealer in London on Saturday last, and asked him what proportion of the wild nutmegs to the cultivated he sold. He said, "The proportion is so small that I can scarcely give you an idea." I said, "28 lbs. to a ton?" He said, "Certainly not so much as that; certainly not more than 14 lbs. of the wild to a ton of the cultivated."

302. What would be the price of those two descriptions?—The wild would be about 1s. 5d. a pound with 5d. duty, that is, 1s. 10d.; and the other would be 3s. 6d. with 1s. duty, which would be 4s. 6d.

303. Mr. Gregson.] You do not believe in a great importation of wild nutmegs?—I do not believe the evidence given by that witness. I think he has stated that which is not true. He has stated that wild nutmegs are invariably sold in the shops for true nutmegs. I may mention that it was from the house of Travers and Sons I made the inquiry; the result of which I have stated.

304. Mr. Moffatt.] Can you obtain a return of the amount of wild nutmegs and of cultivated nutmegs which have paid duty in the course of the last year or two years?—I will do so.

305. Chairman.] What is the next article you have to speak of?—The next is the article of coffee. It has been given in evidence before the Committee that a mixture of chicory and coffee exists to a very large extent. I am not here to deny that a mixture of chicory and coffee is sold; but to affirm that according to my experience for the last ten or fifteen years, the public prefer an admixture of chicory and coffee to pure coffee.

306. In what proportions do the public prefer an admixture of chicory with coffee, to pure coffee?—One-fourth of chicory to three-fourths of coffee is the mixture which the public generally approve of.

307. Mr. Moffatt.] Does not that depend upon the particular quality of the coffee; will not some coffees take more chicory advantageously than others?—Decidedly.

308. You cannot therefore lay down a general rule with respect to what is the most advantageous mixture for the consumer?—A person using chicory, if he understood his business, would use a finer coffee than he could use if he were to sell pure coffee, that is, presuming he sold the two at the same price.

309. Mr. Peacocke.] How much is chicory worth?—Nearly 3d. a pound.

310. What is the price of the coffee you speak of?—From 52s. to 120s. per cwt. The lowest price of Ceylon coffee now would be 1s. 0½d. a pound roasted.

311. Is not there a great temptation therefore to take a large proportion of that which costs 3d. to mix with that which costs 1s.?—I admit there is a temptation.

312. Chairman.] Do you believe that that is commonly done?—A man who is in business for the purpose of fraud, will commit a fraud with respect to any article, and a person who is in business for honest purposes, has no particular reason to carry out fraud in any.

313. Does not the mixture give facilities to a man to commit fraud?—Yes, if he is dishonestly disposed. I contend that if I mix chicory and coffee, and sell it at 10d. a lb., which I do in very large quantities, I am giving the poor a decidedly better article than I could give them at 1s. 3d. a lb. with pure coffee. Supposing I were to say, I will put one ounce of chicory to coffee,

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costing me 1 s. per lb., I might put three ounces to a coffee which costs 1 s. 6 d. per lb., and give a decidedly better article, although the latter mixture would have a larger proportion of chicory than the former.

314. Lord C. Hamilton.] Do you ever state the proportions to the purchaser?—No; and it would be very fallacious unless coffee was all at one price.

315. Chairman.] Would it be foolish, supposing you were to put 50 per cent. of chicory into your coffee, to say so; would a person purchasing coffee with 50 per cent. of chicory in it, be led to believe that he was purchasing good coffee?—He would not be led to believe that he was purchasing pure coffee. A man who knows his business, would not put 50 per cent. of chicory with coffee.

316. Do you mean it is never done?—No; but it is the exception, and not the rule.

317. Mr. Gregson.] What is the advantage of the grocer mixing the two articles; would not it be better if persons bought a pound of coffee and a pound of chicory separately, and mixed them as they pleased?—The Committee is aware that during the administration of Lord Derby there was a prohibition to sell the mixture, and coffee and chicory were sold separately. During the short time that that was in operation, I had more fault found with my coffee, and more coffee returned, than during 10 years besides I had been in business. I gave every opportunity to the public to grind the coffee for themselves, inasmuch as I purchased mills at 1 s. 5 d. each and sold them at 1 s. 6 d. They bought the coffee whole, and the chicory in a powdered state, and after having tried it, they returned the mills and asked me to take them back at half price, and give them the chicory and coffee as formerly mixed. I told them I could not do so on account of the present arrangement, and many of them left off drinking coffee. They said, if we cannot have coffee mixed for us as we used to have, we will discontinue the use of it.

318. If you sold coffee and chicory both ready to be mixed, would not that be advantageous?—The public say it is not.

319. Has it ever been offered to them?—Yes; and further than that, I took the trouble to put the question to my customers, will you have chicory and coffee mixed, or will you have coffee; 75 or 80 per cent. of the public required the mixture, and refused the pure coffee. That was because for 1 s. they can get a coffee which suits their palate better than the pure coffee which you can supply them with at 1 s. 8 d. Some years ago a young man who had been in the business, went out of the business and went into another line of trade, and he came to me and said, I have some customers whom I should like to retain, and I am willing to divide the profit with you, if you have no objection. I said, if you will bring me the orders I do not object to divide the profit. They were satisfied with all the goods I sold them except coffee; this was before I used chicory; constant complaints were made of the coffee. He said he was very sorry to leave me, but unless I could supply him with the coffee he had been used to he must leave me. I gave him coffee at 1 s. 4 d. which cost me 1 s. 8 d., and that did not give satisfaction. I then sent for 6 lbs. of chicory for the first time in my life, and mixed the proportions which he stated, and I never had any complaints from those parties afterwards. Take the finest coffee you can produce, if you give it to the public who have been accustomed to use chicory with their coffee, they will be dissatisfied with it.

320. Mr. Peacocke.] Is there any objection to your mixing it, telling the purchasers that they are buying a mixture?—That I see no objection to.

321. Mr. Gregson.] Do you label the proportions which you use?—No. Here is one of my papers. The mixture is not only sold in a marked paper, but a differently coloured paper.

322. You consider that you sell more coffee and chicory mixed, with these labels, than pure coffee?—I sell ten times as much of the mixture as I do pure coffee.

323. Mr. Moffatt.] It is the custom of the retail trade, is it not, to sell the mixture in a paper of that colour and pure coffee in white paper?—It is.

324. Lord C. Hamilton.] When a customer asks for coffee, do you give him the mixture?—If a person comes in and asks for a pound of 1 s. coffee, we know he wants the mixture, because we do not sell pure coffee under 1 s. 2 d. a pound.

325. The customer knows that he will, for his 1 s., receive coffee and chicory?—Yes, most unquestionably. I published a circular respecting this mixture

mixture in 1853, which I beg to put in. And with respect to canister coffee, I have the canister stamped on the lid and at the bottom, with the words "This is sold as a mixture of chicory and coffee," so that there can be no deception.

326. Viscount Goderich.] If you were to go into a shop and ask for pure coffee, do you think it would be right that chicory and coffee should be sold you without your being told it was a mixture?—That would be decidedly wrong, and, I believe, under existing arrangements, it would be very difficult to do so. I presume a tradesman is justified in giving that which he believes will give the greatest satisfaction to his customers. I think if a purchaser goes into a shop and requests to have pure coffee, and he has a mixture given him in a plain paper without a label, it is a fraud.

327. Suppose he simply asks for "coffee"?—I think the onus should lie with the purchaser. Knowing, as I do, that from 70 to 80 per cent. of the customers require the mixture when they ask for coffee, it is not too much to require the remainder to ask for pure coffee when they require it.

328. Mr. Gregson.] You do not state the proportions of the coffee and chicory upon your label?—No; supposing I choose to mix chicory with coffee which costs me 1 s. 6 d., and another trader chooses to use coffee which costs him 1 s., the proportions would be no test of the quality of the mixture. Any attempt to compel the dealer to state the proportions must fail, as it would be utterly impracticable. For instance, suppose the maximum of chicory should be fixed at 25 per cent., an excess of one or two per cent. must be made punishable, and what trader would be secure; or how would it be possible in mixing 84 lbs. of coffee and 28 lbs. of chicory to ensure a perfect uniformity throughout; or by what means, analytical or microscopical, can the proportions within one, two, or five per cent. be ascertained? No trader would ever be safe; for although the most scrupulous exactness might be exercised in weighing the proportions, they might be so disturbed in mixing and grinding that the dealer might be liable to punishment every day for an excess of per centage of chicory in some portions of the hundredweight, while other portions of the same hundred weight might be deficient. In fact, it appears to me, that the present compulsory labelling of the "mixture" will be quite sufficient to ensure the public being able to obtain genuine coffee whenever they wish it.

329. Do not you know when you mix it what the coffee costs you?—Yes, but unless I could make every coffee cost the same amount, it would be fallacious.

330. Chairman.] You say the test of proportion would be fallacious, to a certain point, where the chicory amounts only to 15 or 25 per cent., but supposing a man put in 50 per cent., and you compelled him, if he did so, to mark it upon his label, would it be fallacious?—I do not think the Committee or the Government ought to interfere with the price obtained for coffee any more than in the case of tea. If I buy tea at 1 s. 2 d. a pound, the Government would not think it right to compel me to sell that tea at a certain price; the public must be the judges of whether they will buy it or not.

331. But the public cannot judge of the quantity of chicory contained in the coffee?—They can judge whether it suits their palates or not. Competition, I think, would always protect the purchaser, so long as the purchaser knows what he is buying. When permission was given to use coffee and chicory mixed, and sell it as such, I published this notice (*producing the same*), which I put into the window of my shop. What I contend is, that the present arrangement of selling a mixture, plainly labelled as a mixture, is a great benefit to the public. The majority of the public prefer the mixture to the pure article. Supposing the use of chicory were done away with, the public would not be able to purchase coffee for less than 1 s. 3 d. to 1 s. 4 d. a pound, and that of the lowest description; and one ounce of that coffee would not yield them half so good a beverage as one ounce of the mixture now sold at 1 s. a pound.

332. You object to let them mix it for themselves, because they will not do it?—Practically they will not.

333. Lord C. Hamilton.] You say, in the first place, they do not like the pure article, but they prefer the mixture?—Most decidedly.

334. Mr. Peacocke.] They would regret the absence of the chicory?—Decidedly so. A great deal of the evidence which has been given here is only theoretical; now mine is practical.

335. Can you state what the practice of your neighbours is with regard to the proportions they use; have they found the same proportion which you select

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Mr. J. Abbiss. select to suit the public taste?—They say one-fourth is a good proportion, and if a larger proportion were used they would lose their custom; but I do not think it would be wrong for a man to use a larger proportion. Supposing he chose to use half and half, and sold it at a proportionate price, chicory being a wholesome article, I do not think there would be any harm in that. If I went and bought common tea at 1 s. a pound, and charged 7 s. a pound, you would not prohibit me from charging so much for the tea; you would say my customers would soon find it out, and they would not give me 7 s. when they could buy the same tea at other shops at 3 s. 6 d. a pound. I have never heard any complaint from the public against the use of chicory and coffee; on the contrary, I have had very many and great complaints when chicory was prohibited. Another thing is, that when it was prohibited, there were persons who would sell it, notwithstanding the prohibition. I had a coffee-shop keeper who came to me and said, "You used to supply me with a mixture of chicory and coffee; why cannot you do it now?" I said, "I cannot do it by law." I gave him the proportions, and told him how to mix it. He said, "I cannot do it as you did; it is not nearly so good;" and after finding fault several times, he said, "I have found out a man who says he will sell me the mixture if you refuse, and I must leave you unless you will supply me with what I require."

336. Is there any skill required in mixing chicory with coffee?—There is a volatile oil in coffee which flies off on its being ground, and there is an absorbent in chicory which absorbs that oil; if you grind chicory and coffee together you find that not nearly so much aroma flies about as if you are grinding pure coffee, and I believe if it were possible to separate the two you would find, after they had been ground together, the chicory had absorbed a large quantity of the essential oil of the coffee, which would otherwise have flown off in the grinding. Any one may convince himself of this fact by observing a packet of genuine ground coffee, which has been allowed to remain unopened one or two days, in which case the paper will be found to present an oily appearance, occasioned by the absorption of the oil of the coffee by the paper. The oil of the coffee has a strong tendency to turn rancid, which tendency, chicory, by its powers of absorption, will to a great extent prevent. The finest coffee that could be procured, would, if left ground for a fortnight, be entirely spoiled; while a "mixture of chicory and coffee" will be found comparatively fresh at the end of three months.

337. Lord C. Hamilton.] Is it the usual practice in the trade to grind the two together?—Yes; it is the practice of those who know their business.

338. Mr. Moffatt.] Will you inform the Committee whether the views you have stated in regard to the public preferring coffee mixed with chicory and rejecting coffee when sold pure, are confined to your own experience, or is it the general experience of the grocers of London, so far as you are acquainted with them?—It is the general experience of the trade, with the exception of a few at the West End, who get a high price for their coffee. The general experience of grocers is, that from 70 to 80 per cent. of the public, at least, prefer the mixture to pure coffee.

339. And your acquaintance with grocers in all parts is extensive?—I have had communication with many thousands in London and the country.

340. The result of those communications leads you to the conclusion that their experience is the same as yours in that respect?—Yes; I would venture to assert that supposing two shops were opened in a street, and one man were to sell the finest Mocha coffee at 1 s. a pound, and another were to sell the mixture at 1 s. a pound, the man who sold the mixture would get a majority of the custom. I have stated these facts because I think the Committee have not had the evidence before them hitherto that the public are in favour of the mixture, because they get a decidedly better coffee at 1 s., with chicory, than they could possibly obtain without chicory. Many poor people buy an ounce of coffee, perhaps, just before breakfast; if we were to sell them half an ounce of coffee, and ask them to buy a quarter of an ounce of chicory, they would not do it. It is well known the less such a class of people are compelled to do for themselves, the better they like it.

Veneris, 29<sup>o</sup> die Februarii, 1856.

## MEMBERS PRESENT.

Mr. Moffatt.	Mr. Alderman Cubitt.
Mr. Wise.	Mr. Knight.
Mr. Sheridan.	Viscount Goderich.
Mr. Kinnaird.	Mr. Peacocke.
Lord Claud Hamilton.	Mr. Cowper.

WILLIAM SCHOLEFIELD, Esq., IN THE CHAIR.

Waller Lewis, M.B., Esq., called in; and Examined.

341. Chairman.] I BELIEVE you are in the service of the Post Office, as a medical officer?—I am. W. Lewis, Esq., M. B.

342. Some time ago, did you go abroad at the instance of the Government, for the purpose of making inquiry into certain questions connected with the public health?—I did. 29 February 1856.

343. Will you state to the Committee when and where you went, and the result of your investigations, especially with reference to the subject of adulterations of food, drinks, and drugs?—My instructions from the Secretary of State were, to visit Paris, and put myself in correspondence with the Home Minister there, Monsieur Billault, from whom I had introductions to Monsieur Trebuchet, and to Monsieur Collet-Meygret, the director-general of police, under whose special department the sanitary law in France is. I had every opportunity afforded me there of visiting the different establishments where the public health is attended to by police measures; and, on the whole, it was extremely satisfactory. The result of my investigations was published in a Blue Book last year, under the title of "Report on Laws and Ordonnances in force in France for regulating noxious Trades and Occupations." The result was that a great deal which is done in France, in my opinion, might be imitated here, though, from the different circumstances of the two countries, there may be a great deal of interference there which I think would not be permitted here; but, generally, unwholesome trades are carried on there with far less injurious influence on the health of the public and the neighbours than is the case here. It is well known that the slaughter-houses are very much better managed there, there being public abattoirs established; whereas, in this country we hear of a great deal of disease induced in the neighbourhood from noxious emanations, arising from slaughter-houses; in France, from all the inquiries which I made, there is nothing of the sort.

344. While you were in France, did you make any inquiry into the custom of the police in superintending articles of food, ascertaining whether they are adulterated or not, and preventing and punishing adulteration?—I did; in fact, I was daily in communication with M. Trebuchet, who is the Chef de Salubrité Publique, and has for many years been charged with the carrying out of all those measures.

345. What are the special duties, as far as you ascertained them, of the Chef de Salubrité Publique?—There are two Conseils in France, which between them regulate, under the Préfet of Police, all matters relating to the public health. One Board is called the Conseil de Salubrité Publique, and the other the Conseil de Santé Publique.

346. What is the distinction which exists between them?—The Conseil de Salubrité Publique has more superintendence over measures affecting the public health, hygiene measures. The Conseil de Santé Publique is a department which meets at the Hotel de Ville under the Préfet de la Seine, and takes up, as I understand, more particularly questions relating to the adulteration of food.



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347. In reference to the action of that body, the Conseil de Santé Publique, can you inform the Committee what measures they adopt for the prevention and punishment of adulteration?—I have noted some of them down for the information of the Committee. There have been many Ordonnances of Police, beginning, I think, in the early part of this century, to prevent adulterations of food. Those have been changed, and superseded by fresh ordonnances, till the last one, which is dated March 1851. It bears date the three days of the 14th, 15th, and 17th of March 1851. This is the last ordonnance, repealing all others.

348. Under what authority is a police ordonnance issued?—Under the authority of the Minister and the Préfet de Police, countersigned by the First Minister of State. Every ordonnance of police is law. It is printed and signed by the Chef de Police, countersigned, I think, by the First Minister, and it is ordered to be printed, and the mayors of the different arrondissements have orders in the last paragraph to see to the carrying out of the ordonnance, whatever it may be.

349. It is not a law which passes the Chambers?—No; I think that is not required at all.

350. It is a municipal law, requiring the signature of a Minister of State?—That is all. The first article begins, "Those shall be punished according to Article 423 of the penal code, first, who adulterate articles of food or medicine; secondly, who sell or expose for sale such as they know to be adulterated,—*falsifiées* is the French term; thirdly, those who deceive or attempt to deceive as to the weight or measure of articles of food, either by using false weights and measures, or inexact instruments, or by any manoeuvre falsifying the operation of weighing or measuring. Article 2: if the adulteration is caused by substances noxious to health, the fine shall vary from 50 to 500 francs, and imprisonment from three months to two years. This article is also applicable even in case of the adulteration being known to the purchaser or consumer. It is not allowed to be adulterated even with their sanction, as it were. Article 3: a fine varying from 16 to 25 francs, and imprisonment from six to ten days, or one of those two punishments only, according to circumstances, shall be incurred by those who, without legitimate reasons, shall have in their houses or shops, or in the markets or fairs, false weights or measures, or improper instruments for weighing or measuring, or who have on their premises for sale articles of food or medicine which they know to be adulterated or decomposed. If the substance so adulterated is noxious to health, the fine may be increased to 50 francs, and the imprisonment to 15 days. Article 4, if the accused found guilty of the above infractions of the law shall have been condemned on a similar infraction during the preceding five years, the punishment may be doubled, and the fine may even be raised to 1,000 francs. By Article 5, adulterated substances shall be confiscated. If they are fit for alimentary or medicinal use, the Tribunal may place them at the disposal of charitable establishments. If unfit, they shall be destroyed, or thrown away at the expense of the guilty person. The Tribunal may order the destruction or effusion before the domicile of the guilty person. The last article is, that the Tribunal may order the publication of the judgment pronounced, in whatever places it thinks fit, in the vicinity of the infractor's own house, for example, and the insertion thereof in the newspapers, all at the expense of the accused person." That is a short summary of the present laws upon the subject of adulteration, superseding all previous ordonnances.

351. Do you know what is the manner in which that law is put into practical operation; by whom are the adulterations in the first instance discovered, and what course is adopted for the purpose of bringing them under the notice of the authorities?—I believe there is a Board of scientific men attached to this Conseil de Santé Publique; any person buying articles of food or medicine which are suspected to be adulterated may bring them for examination to this Board; the police may then visit the shop of the person who is said to have sold these things, seize the articles, and take them away. There are, however, certain establishments which the police visit constantly without any cause of suspicion of adulteration whatever being brought to their notice.

352. Mr.

352. Mr. *Wise*.] With respect to the Conseil de Salubrité Publique, have not you heard that the Council is composed of the Préfet himself, 12 members chosen from the first chemists in Paris, five gentlemen, called adjuncts, who are all first-rate men in Paris, as well as 12 members who are called honorary members?—Yes.

353. You have stated that any person may complain of an article purchased by him?—Yes, so I understood.

354. Have you not also heard that the Conseil de Salubrité have inspectors specially appointed for the examination of articles?—They have.

355. It was represented to me when in Paris, that the parties themselves could not complain, but that these inspectors go about and investigate the articles sold in different shops, and themselves report to the Conseil de Salubrité, and take the necessary steps to punish the parties?—I believe that is the case generally, but there is a way also in which, either directly or indirectly, the public themselves may address the Conseil de Salubrité; it may be done through the inspectors.

356. Did you ever see an inspector visit a wine-shop?—No; but I have seen some wine which has been thrown away because it was not good.

357. Was it not thrown into the Seine?—Yes.

358. Did you hear anything of the course which is pursued by the Council with regard to bread?—That did not come particularly before me.

359. You are aware, that in France, there is an assize of bread?—There is.

360. Did you hear whether that assize has a beneficial effect upon the character of the bread?—It is very much approved of in France; I believe more in Paris than in the provinces. When I was there last there was an assize for the first time put upon meat.

361. You are aware that the bakers in Paris are under the control of the Executive?—Yes; every fortnight the price of bread is fixed.

362. Viscount *Goderich*.] When you spoke in answer to the honourable gentleman of the Conseil de Salubrité, did you mean the Conseil de Salubrité, or the Conseil de Santé Publique?—I think all such matters are under the Conseil de Santé Publique.

363. Mr. *Peacocke*.] You have been speaking of those Conseils as existing in Paris; do they exist in the provinces also?—No; there are Conseils de Salubrité in the provinces, but they do not take up these questions relating to the adulteration of food. In one of the last reports of the Conseil de Santé they expressed a wish to the Minister of Police that those regulations should be extended from Paris to the provinces; for instance, in the case of sweetmeats, they are very well made in Paris for consumption in the capital, but a vast quantity of sweetmeats coloured with poisonous and noxious substances are made in Paris, and sold in the provinces, and there they can be retailed, because this law does not extend to the provinces. The committee who examined this subject recommended that the law should be made to extend to the provinces.

364. You have said that this power is conferred not by a law, but by ordonnances of the police. Does not the code entrust such sanitary powers to the police?—It does.

365. Therefore the code contains the law, the powers may be said to be given under it?—Yes.

366. *Chairman*.] Do you know what the regulations are in France with regard to sweetmeats?—Yes, I have a statement of them with me. The law begins by saying that there must be an ordonnance relating to cheap confectionery, much of which is now rendered noxious by the habitual employment of certain poisonous substances for colouring it; among the substances so used pointed out as noxious are Scheele's green, chrome yellow, minium, and red lead; and it goes on to say, that fatal accidents have sometimes been caused by these toxic agents. This ordonnance of police is dated the 22d of September 1841: it concerns liqueurs, bon-bons, lozenges, and so on. The first article is, "no mineral substances shall be used in making or colouring sweetmeats, except Prussian blue and pure ultramarine." The second article is, "No paper for wrapping bon-bons must be coloured with any other mineral substances than the above two," because children frequently put the papers in their mouths. Thirdly, "No fulminating preparation must be used in envelopes of bon-bons." Fourthly,

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"All pastrycooks and other dealers who sell bon-bons must wrap them in paper bearing their names and addresses upon them, so that they can be traced." Fifthly, "The makers and dealers shall be personally responsible for the accidents caused by the bon-bons they make or sell;" and, lastly, annual visits are to be made to the shops of the makers and retail dealers in bon-bons, to certify whether they carry out properly these orders.

367. Can you speak of your own knowledge of the result of those laws upon the condition of the food sold in Paris as to its purity; are you aware whether the bread and other things sold in Paris are relatively purer than they are to be met with in this country?—I resided a great deal in Paris and in the provinces, and it is a question I very frequently asked, and certainly from the answers to the questions which I so constantly put, as well as from my own experience, I think in the capital undoubtedly there is a great deal less adulteration than there is here. Partly from the political institutions of France, and partly because they are accustomed to it, I did not find that the tradesmen themselves complain of those domiciliary visits. Certainly, in the different noxious occupations which are pursued, I was very much surprised to find that the manufacturers rather liked those visits than otherwise. When I went with M. Trebuchet he was everywhere received with the greatest pleasure; of course, a great deal of that depends upon the *suaviter in modo* with which it is carried out.

368. Is it your opinion that, without resorting to the stringent system of domiciliary visits adopted in France, some system might be adopted in this country which would prevent adulteration to a great extent, consistently with the laws to which we are accustomed, which are more free, and of a less oppressive character?—I think it might be. I think a great deal of good might be done. I have no doubt that a Board, in some degree analogous to the Conseil de Santé Publique, might work along with the General Board of Health in this country: I think that a very proper department for such a subject to be managed by. I think the great improvements which have been made in the use of the microscope within the last few years, and the researches which have been made by means of it, give us now the facility of carrying out such investigations with a certainty which a few years before did not exist, and that without hardship to any party.

369. Would you propose that the Conseil de Santé should act for the whole country, or that in the provinces there should be distinct councils appointed?—I think it should be a central Board.

370. On the ground, perhaps, that you would hardly find in country districts men of sufficient scientific attainments?—Yes; and the means of communication are now so easy between the capital and the provinces, that one Board could readily do the whole of the work. There is scarcely any article in this country which is not adulterated. In the public-houses, for example, a very large quantity of liquid is sold as port and sherry wine, which has not an atom of wine in it. A large quantity of yellow substance is sold as mustard, which has no mustard seed in it, and so on with a great number of articles; not only are they adulterated, but there is frequently none of the article itself in the substance which represents it.

371. Lord C. Hamilton.] Do you mean that you would have no local Boards in the provinces under the Central Board?—I think that might be placed under the Municipal Boards which exist in the different county towns. Where there is a local Board of Health, I think such a Board being already in correspondence with the Central Board would be a very good body to refer those subjects to primarily.

372. Mr. Peacocke.] You have given the Committee your definition of the Conseil de Salubrité Publique, and also your definition of the Conseil de Santé Publique. According to your description, what we want most here is the Conseil de Santé, because the Conseil de Salubrité is very like our Board of Health, whereas we have nothing answering to the Conseil de Santé Publique?—We have nothing of that kind at all.

373. But we have the Conseil de Salubrité in the Board of Health?—The Board of Health has no power in London. In France the Conseil de Salubrité Publique exists almost entirely for the capital.

374. Those hygienic subjects which come under the Conseil de Salubrité are precisely such as come under the Board of Health, whereas what you want to establish

establish is rather a Board representing the Conseil de Santé Publique?—Yes; but I think it should be a department of the General Board of Health.

375. That is what is most wanted?—Yes, on these subjects.

376. Mr. Knight.] Do you propose that this council should have any sort of authority, or that it should be called on only to pronounce an opinion as to whether an article was adulterated or not?—The Conseil de Santé Publique has no power except that of making recommendations to the Minister, but the Minister in almost every instance carries out the recommendation of this Conseil to a great extent. The Minister has no knowledge on the subject himself, but leaves it to the Conseils to draw up regulations concerning the adulteration of food; he only acts upon the recommendations of this body. When a new ordonnance is published, it is generally prefaced by the recommendations made to the Minister by this body. It begins, "Whereas it has been represented to us by our Conseil de Santé Publique that such and such articles of food are constantly adulterated, and it has been recommended, so and so; we, therefore, ordain that in future," &c.

377. Do not you think it would be quite sufficient if in England there were a body which could give legal evidence that such and such an article was adulterated, leaving the complaining public to right themselves without the council making any recommendations at all?—I do not think that would be sufficient. I think there are many subjects in this country as to which people are not able to help themselves, and I think that something more should be done for them. This I take to be one of such subjects.

378. There must of course be a penalty attached to the selling of certain adulterated articles, but what is most wanted is some legal evidence of the adulteration; is not that so?—If the law were altered, so that some summary punishment could be inflicted upon those who have adulterated, after proof given of the adulteration, that would be enough, perhaps; but there is no law now to punish adulteration.

379. Mr. Wise.] Except in the case of flour?—Except in the case of flour.

380. Mr. Knight.] That would introduce no kind of police regulation?—No.

381. Lord C. Hamilton.] Do you think that a central Board could act efficiently without some local machinery?—I do not think they could act without there being in the country corresponding Boards; but I think all the analyses could be made in the capital.

382. I understood you to say that in France there is rather a wish to extend the supervision which exists in Paris to the provinces?—There is.

383. Can you state to the Committee in what way it is proposed to organise the council for the provinces?—The report of the committee prefixed to the ordonnance which I have just read on sweetmeats, complains of the fact which I have mentioned, that though sweetmeats are perfectly good in the capital, they are bad in the provinces, and it recommends the Minister to extend the laws just as they are to the provinces; that, in fact, there should be a local Board in other towns besides Paris.

384. Have you ever resided in any of the provincial towns in France, so as to be able to judge whether the sweetmeats and groceries sold there are much inferior to those in Paris?—I have resided there, but I was much younger at that time, and did not pay the attention to such subjects which I should now.

385. Do you happen to know from hearsay whether it is the case that the groceries and sweetmeats sold in the other large towns in France are inferior to those in Paris?—I have heard constantly that they are inferior to those in Paris, from the want of inspection which exists in the provinces.

386. Mr. Wise.] With regard to the definition to be adopted of the term "adulteration," suppose, for instance, that a case of alleged adulteration were brought before the Council of Health, would you have them consider it both in relation to its being a commercial fraud and also in relation to its effect upon health, or which course would you have them take?—By the French Ordinance, dated 1851, the Committee will see both kinds of adulteration are punished, but there is a greater punishment, both in the shape of fine and imprisonment, inflicted where the adulteration is one which is noxious to health. Adulteration, falsification, extends not only to increasing the bulk of the article by adding to it an inferior article, but even giving false weight, so that

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the commercial question is equally looked at, but the punishment is much more severe where the adulteration is with an article noxious to health.

387. Would it not be the most simple course to legislate upon the principle that nothing should be sold different to what it is stated to be; and that no mixed article should be sold, without the vendor stating the character of the mixture at the time of sale?—I think that would be a very simple course, and very much in accordance with our simple legislation of non-interference, if you could carry it out.

388. An adulteration of food is very extensively practised, which is not injurious to health; and it would probably be very difficult for any Conseil de Salubrité to determine in such cases what course should be taken?—Such a case would be the constant adulteration of butter with lard; it is not noxious to health, but it is a great deception, of course.

389. Do you think that the proposed Council of Health could undertake to prosecute a party for mixing articles which were not injurious to health?—Yes, I think they might.

390. Upon what ground?—Merely upon a commercial ground, that it was a fraud.

391. The Board of Health could not interfere very properly with mere commercial frauds, could they?—That is on the assumption that the Board of Health should interfere with nothing which had not a strict relation to health. I do not see that that should be a hindrance to carrying out a project of this kind.

Professor John Thomas Quekett, called in; and Examined.

Professor  
J. T. Quekett.

392. *Chairman.*] YOU are a Professor in the Royal College of Surgeons?—I am.

393. I need not ask you whether you are intimately acquainted with the subject of drugs and medicines; at all events you have turned your attention, to some extent, though not, I believe, as a subject of constant occupation, to the question of adulteration, have you not?—I have.

394. Articles adulterated have been, from time to time, submitted to your examination and analysis, and you have formed some opinion upon them?—Yes.

395. Will you favour the Committee with your views as to the extent to which adulteration is practised, and the articles on which it is most generally practised?—I may state that my observations have been principally directed to articles sent to me by medical men in London and different parts of the country. One thing which I examined about four or five years ago was milk; I have made many examinations of milk.

396. What has been the result of your examinations?—About five or six years ago I investigated one case in which nervous matter formed the sediment; but I may say that since that time I have not been able to detect anything of the kind. I can show the Committee a drawing taken at the time (*producing the same*).

397. In that milk there was a large admixture of what you called calves' brains?—There was; these (*producing the same*) are accurate drawings of cows' milk, consisting of globules of fatty matter, but no admixture of such a structure as you observe in the other drawing.

398. If I understand you rightly, that examination took place five or six years ago?—It did.

399. Have you had any samples of milk submitted to you since that time?—Several.

400. With what result?—I have never been able to detect any solid precipitate; when the milk was very poor those oily globules were very small; since 1850 I have seen no deposit whatever.

401. The only adulteration you have detected in milk since that time has been the not uncommon one of the mixture of water with the milk?—Exactly so.

402. *Mr. Wise.*] You have no reason to believe that milk is largely adulterated in London except from the pump?—No. I have often had milk submitted to me by wet nurses, in order that its richness might be tested.

403. It has been currently reported that sheeps' brains are largely used in milk; is that correct?—I do not think that has been done lately.

404. Is

404. Is there any other article that you have examined?—I have often examined coffee. I lived for many years next door to a large chicory manufactory, and I soon found out the difference between chicory and coffee.

405. What has been the result of your investigations?—Up to a recent period, chicory could be almost always detected in the cheap kinds of coffee.

406. You are aware that coffee, if mixed with chicory, is now sold as a mixture?—Yes.

407. Have you ever purchased or seen a sample of coffee, called pure coffee, which was mixed with chicory?—No, I cannot say that I have.

408. Is chicory the only admixture you have observed?—I have detected beans and matters of that kind.

409. In large proportions?—Not in very large proportions; but I should state that I have not been officially employed in this way. The articles I have examined have been sent to me principally by medical men. I have been appealed to occasionally by grocers; but what I have done has been principally to keep them out of law, showing them that they were in error.

410. One reason why the Committee are desirous of asking for information from you is, that we are led to believe that you have not formed any strong views in reference to the prevalence of adulteration generally?—My knowledge arises chiefly from my acquaintance with structure; I have for many years employed the microscope, and it is from a knowledge of animal and vegetable structures that I can detect adulteration.

411. Is there any other article of food to which you have directed your attention; have you ever had any bread submitted to you?—Yes, I have examined bread.

412. What has been the result of that examination?—I have found it adulterated with potato starch and bean starch.

413. To a large extent?—Yes; on two occasions very largely.

414. Have you found alum?—You cannot recognise that very well by the microscope.

415. The detection of that must be the result rather of chemical analysis?—Yes.

416. *Mr. Wise.*] Can you suggest to the Committee any simple mode of testing the purity of bread?—I can only speak of it microscopically, not chemically. The only way in which it can be done is by a person who is well acquainted with different kinds of starch.

417. *Mr. Sheridan.*] Did I understand you rightly to say you had been consulted by grocers simply to know how far they might go in adulteration?—No; they brought me samples, and I wished merely to point out to them that they were in error; that their goods were adulterated.

418. Was that with the object of ascertaining what substance they contained?—I believe it was with the object of bringing an action against the Sanitary Commission for the papers published by them in the "Lancet."

419. *Chairman.*] Are you aware of any action ever being brought against the "Lancet" for the publication of statements of the kind?—No.

420. Have you ever examined beer or porter?—I have not done so very carefully.

421. Can you speak from your own knowledge, as a consumer, of any adulterations which have come under your notice?—I have known men taken ill from drinking a particular kind of porter.

422. Had you reason to suppose, from the symptoms of the disorder, that it arose from the adulteration?—Yes; I believe it arose from the adulteration.

423. What do you suppose the nature of the adulteration to have been?—Some mineral substance, which I could crystallize; probably sulphate of copper.

424. Do you know anything respecting the adulteration of drugs?—Very little. I have examined a great number of drugs, such as barks and things of that kind, in reference to their structure, not with any view to their being adulterated.

425. *Mr. Peacocke.*] Has cream ever come under your cognizance?—In the case of milk.

426. Is that much adulterated?—No; you can generally distinguish the cream from any foreign matter; it is an accumulation of large oily particles, and if there were any solid substance mixed with it, you could detect it.

427. Is tobacco adulterated?—I have examined sections of the tobacco plant and leaf.

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428. Not

Professor  
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Professor  
J. T. Quekett.

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428. Not made up?—No, not made up.

429. Lord C. Hamilton.] Have you never turned your attention to the subject, with the view of knowing what the practice of traders generally is?—No; principally to assist medical men. I know the structure of most animal and vegetable substances, and can recognise any foreign matter which may be introduced.

430. You have not examined specimens of milk taken from populous neighbourhoods?—No, with the exception of London.

431. Would not it be the case that the diseased state of the cow would produce those appearances which you have described?—No; there is something so peculiar in nervous tissue that a practised eye can hardly fail in detecting it.

432. Viscount Goderich.] You said that in the case of those persons who brought matter to you to analyse, with a view of proceeding against the "Lancet," you were obliged to inform them that the articles were adulterated?—Yes.

433. Mr. Sheridan.] In fact, you confirmed the opinion which had been given in the "Lancet"?—As far as the microscopic test was concerned.

Lewis Thompson, Esq., called in; and Examined.

L. Thompson, Esq.

434. Chairman.] I BELIEVE you are by profession an Analytical Chemist?—I am a medical man also, a Member of the College of Surgeons, and a Licentiate of the Apothecaries' Company.

435. Do you practise as a medical man?—I do.

436. And also as an analytical chemist?—Yes.

437. I believe you have devoted a good deal of attention to the question of adulteration, especially in reference to bread, and to porter and beer?—I have paid attention to adulterations generally for some years; I have been called to do so as a part of my profession.

438. The Committee wish to call your attention, in the first instance, to the two articles I have named. With respect to the adulteration of bread, will you state to the Committee what your experience has been in the examination of that article of food?—In respect to bread, I have within the last eight months examined bread obtained at 78 different shops; I have, in fact, obtained other samples more recently; but I dare say they are from some of the other shops. In 78 cases, at all events, the shops have been different, and the samples have been procured for the most part by common people, not by myself; sometimes by workmen, and sometimes by their wives.

439. Were they purchased for the purpose of being examined?—Yes.

440. And sent for to the shops by yourself?—Yes; I wished to be very certain as to the authenticity of the samples. In all these cases I have no doubt alum had been added to the bread.

441. Lord C. Hamilton.] In the whole 78 cases?—I have no doubt of it; I found it quite impossible, however, to ascertain that fact chemically; that is to say, although alum had been added to the mixture of which the bread was made, when baked the bread contained no alum; there was no alum in the bread.

442. Chairman.] How do you arrive at the conclusion that it had originally contained alum?—Because I was able to find the constituents of alum in the whole of the bread.

443. What do you call the constituents of alum?—The constituents of alum are sulphuric acid, potash, and alumina, with water.

444. Those constituents you found in bread?—I did, but not combined; they are alum only when combined.

445. Mr. Wise.] How much alum have you found in a 4 lbs. loaf?—The supposed quantity might have varied from 20 grains to 30 on the average.

446. Would such a quantity as that be injurious to health if taken every day?—That quantity of alum swallowed would be unquestionably objectionable.

447. No one person eats 4 lbs. of bread a day?—No, nor in eating bread does he eat alum. There it is I think the Committee has been led away by erroneous statements.

448. The property of the alum exists, does it not?—No, the property of the alum is totally destroyed.

449. Mr.

449. Mr. Peacocke.] Should the constituent parts of alum be found in any of the legitimate component parts of bread?—Not properly speaking; the constituents of alum do not exist in wheat, and therefore they should not exist in wheat flour.

450. Nor in the yeast?—No, nor in the yeast. What I wish to observe is, that the finding of those things is no proof that alum has been contained in the bread, or mixed with it; they might be added separately; that is, I could add alumina to the flour; I could add sulphate of potash or bisulphate of potash to the flour; I should then have the constituents of alum, but I should not have added alum.

451. Viscount Goderich.] Do you think those substances had been added to the bread separately?—No; I have no doubt that alum had been added to the bread.

452. Lord C. Hamilton.] Would not the combination of great heat with moisture reduce the alum to those products which you have described?—No; it is the contact with the flour which does it.

453. Alum and wheat flour combined, being subjected to moisture and to heat, would produce the result which you have described?—Yes; but you would have no alum.

454. You would have the elements of the alum as changed in their appearance by the action of heat and moisture?—Yes; and their action upon the human system is also altered.

455. Therefore what you mean to say is, that you do not find alum in its true form, but you find those products to which it is reduced after being subjected to moisture and great heat?—There must be also the presence of the gluten.

456. Viscount Goderich.] Do you consider that in that decomposed state it is not injurious to health?—I should say not; alumina is quite insoluble, and bisulphate of potash would have a totally different effect to alumina. In fact, if it had any action at all, it would be that of a purgative; it would have no astringent action at all.

457. Chairman.] If instead of 10 or 20 grains, you found 50 grains or 75, what would your opinion be?—Fifty, or even 100 grains in a quartern loaf, I should think, would be totally decomposed.

458. And in that state you think it would be in no degree injurious to health?—We should then have to consider it as bisulphate of potash, a comparatively harmless agent, a substance which would certainly have very little action, and which I should suppose, as a medical man, would be rather beneficial than otherwise, especially with sedentary people.

459. Mr. Wise.] What do you conceive to be the object of putting alum into bread?—The object of the bakers I do not know; I can state what its effect is; its effect, by decomposing a portion of gluten, whitens the bread; it also renders the bread a little shorter, it breaks more easily; the glutinous matter being partially neutralised: the bread breaks more easily, and has a better appearance; but the beneficial action of alum upon bread is this, it prevents mouldiness. If you bake a loaf without alum, in consequence of the gluten remaining undecomposed, it sooner becomes mouldy in a damp situation. If you put a small quantity of alum into it, you can keep your bread in a damp place without the risk of it becoming mouldy.

460. Have you tried the difference between bread made with alum and without?—Yes; it is a well-known fact that alum is continually put into the common paste which printers use, to prevent its becoming mouldy.

461. You believe that the application of alum to flour has the effect of whitening bad or dirty flour?—I think it whitens any flour.

462. Chairman.] In that case, inferior flour may be passed off as superior flour simply by the admixture of alum?—The quality of the bread is improved, whatever be the kind of flour which is employed.

463. A person having a quantity of flour of a bad colour, may sell it for superior flour, and at a higher price, by mixing alum with it, in consequence of that alum making it white, and of a better appearance?—That would be so if you prevented the person who uses the better flour from adding alum too; but he would have the same power of raising the quality of his bread.

464. In fact a man may impose upon a purchaser by leading him to suppose that he is purchasing bread made of a better quality of flour than he is actually doing?—It has the effect of increasing apparently the value of the flour.

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465. Have

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465. Have you ever subjected any specimens to this test; have you macerated bread in water, and then tasted the water?—Yes.

466. Did you by that means detect the presence of alum?—No. I wish to observe, that in the evidence there are two modes of analysis stated, but I am convinced that the parties ought to have known better than to have given those modes. I wish, for example, to refer to Question No. 2123; you will there find a mode of detecting alum in bread described, which consists in macerating it in cold water, and then you are told that by adding ammonia to that water, you get a precipitate of alumina; the precipitate, however, need not necessarily be alumina; something more is required; and if you will allow me, I will show you that. I have here two solutions (*producing the same*); one contains alumina, and the other contains phosphate of lime dissolved in it, and I may remark, that phosphate of lime is a necessary constituent of flour, and if flour did not contain phosphate of lime, it would not be so well qualified for food as it is; it would not contain a very important element which is necessary to perfect the whole body, and it would not be so fit for food; one of the actions of alum is to render that phosphate of lime more soluble, and therefore I should feel inclined to suppose that it has in that respect a beneficial action. I cannot say at this moment which of these two is phosphate of lime, and which is alumina; this (*another bottle*) contains a solution of common ammonia; these fluids therefore really represent water in which bread has been steeped, except that, as I shall afterwards show, there is no alumina capable of being removed from the water by those means; if I now add an excess of ammonia to these, you will see that I shall get a precipitate which will be extremely alike in the two cases, so much so that it will be impossible for any person, by the eye, to say which is which; but I have a means of determining which is which, and that, by the evidence, you are not instructed in; you are not told anything about it. Now, a person who had obtained a precipitate, here says that is alumina; but it is necessary to use another test for that. In fact, a man who was a good chemist would not have used this test at all. However, having got into a dilemma of this kind, I can get out of it again, by ascertaining which is alumina; because now the precipitate you see here will be dissolved by a solution of potash, in the case of the alumina, but it will not in the case of the phosphate of lime; therefore I shall now be able to determine which is which. Having now added the solution of potash, I know this to be the alumina at once; for the precipitate has disappeared. The Committee will see that, upon adding the solution in the same way to the other, I shall have a precipitate which remains constant.

467. The object of your experiment is to show that the answer to this question in the evidence is utterly fallacious?—It is; and therefore I think, unless I am to suppose that the Report is incorrect, the person who gave that answer did not know how to analyse bread.

468. The witness was asked, "Can you suggest any simple means by which the public could detect alum in their bread?" and then he gives this as a simple means of doing it?—I think a person who understood the subject would not so have deceived the Committee; for at the best it is a deception of the Committee, and it is misleading the public. Something of the same kind will be found at Question No. 568.

469. Mr. Peacocke.] Cannot you, by the test of taste, after the maceration of the bread, detect the presence of alum in the water?—Certainly not; I have not been able to detect any alum in the water derived from the maceration of bread.

470. What amount of heat would it require in baking to expel the water from the alum?—If you will allow me, I will show you that immediately, because that has reference to another question of great importance. I only wish now to turn the attention of the Committee to No. 568, where there is a similar description of a mode of detecting alum in bread, which is liable to the same fallacy. The inference is, that there must have been a disposition to mislead the Committee, or else the person was not acquainted with the proper mode of detecting alum.

471. Chairman.] You dispute the conclusion at which the Witness arrives?—Yes. The Committee will find at No. 536 an assertion which, I think, must also be incorrect, and I wish to show that it is so. I can show that at the mere heat of boiling water, alum ceases to be a solid.

472. Mr.

472. Mr. Peacocke.] By the application of an amount of heat sufficient to withdraw all the water from the alum, would not the loaf be burnt to a cinder?—The question I understand to be, whether a temperature which would destroy the crystallisation of the alum, would not be high enough to char the vegetable matter of the bread.

473. In the ordinary process of baking, would the water be wholly expelled from the alum?—The whole of the water would not be expelled from the alum at that temperature.

474. Mr. Moffatt.] Then the alum would still remain in the form of a crystal in the ordinary process of baking?—No, it would not be a crystal. I have actually put crystals of alum into different parts of a loaf, and then had the loaf baked, and I have found it impossible to see with the eye any crystal of alum remaining.

475. It has, in fact, become completely absorbed?—Completely decomposed and absorbed into the substance of the bread. The operation of the heat has been to liquefy the alum, and cause it to be absorbed by the farinaceous particles.

476. The result of your evidence upon that question is, that it is impossible that the crystals of alum can exist in bread after it has been baked?—Yes, quite impossible.

477. Would there be any possibility of the dissolved particles of the alum re-uniting, and forming crystals in the bread?—It would be quite impossible.

478. Mr. Wise.] How many loaves do you think you have purchased with a view to these inquiries?—I have purchased a great many, and I have purchased them at 78 different shops.

479. What have you paid for those loaves?—The half-quartern loaf has been sold for from about 4 d. to 6 d.

480. What have you yourself paid for a 4 lb. loaf?—The price I have paid I think has varied from 8 d. to 9 d.

481. Did you ever buy flour?—Yes.

482. What did you pay a lb. for the flour?—I have bought flour by the half-quartern; I think the flour has cost me about 3 d. a lb.

483. Can you suggest to the Committee how it is that a baker who sells a loaf manufactured, weighing 4 lbs., having had all the trouble and expense of the manufacture, and who must also obtain a profit, can sell a 4 lb. loaf for 1 d. less than he sells 3 ½ lbs. of flour for, upon which he has bestowed no trouble whatever?—The 3 ½ lbs. of flour would make more than 4 lbs. of bread; a sack of flour, which weighs 280 lbs. of flour, ought to make from 92 to 94 quartern loaves. That is allowing for the amount of water which is necessarily absorbed into the bread in the manufacture of the bread.

484. How much bread would a lb. of flour make?—It generally increases in weight about one-third.

485. Does not this application of alum to flour enable a baker to use a great deal more water?—I rather suspect not; I very much doubt it.

486. Chairman.] You do not think, then, that bread containing alum holds more water than bread not containing alum?—I should think not; in the proportion in which they use it, I cannot see in what way it should produce that effect.

487. From your own investigation, can you distinctly deny such an allegation?—From practical experience, I cannot answer that question, of course.

488. You do not think it would, but you cannot speak from actual experience?—Chemically speaking, and speaking from the little knowledge I have upon the subject, I should say it would not. I cannot see why it should.

489. Mr. Wise.] Suppose you take two slices of bread, one from a loaf which does not contain alum, and the other from a loaf containing alum, and you put those two slices into saucers, do not you think that the bread containing the alum will absorb more water than the other?—That is a mechanical effect; it would depend entirely upon whether the bread be of a spongy nature or not. If you happened to have bread which was very sad, as it is called, or very close grained, it would not absorb water readily.

490. Suppose there were bean or pea flour added to it?—I have no doubt it would increase the absorbing power.

491. Chairman.] Are you aware that Baron Liebig has given an opinion to the effect that the use of alum in bread is very injurious?—That is quite possible; he has probably not investigated the circumstances which, I think, I have

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*L. Thompson, Esq.* I have been the first to make known, that the alum is decomposed. He argues upon the supposition that the alum remains; and all the arguments I have yet seen are founded upon the supposition that the alum is swallowed, and an astringent effect is ascribed to it. That would be true if the alum remained. No doubt there is a decomposition of it. It is like the case of the bi-chloride of mercury, which is a poison; but when mixed with the white of eggs, it ceases to be a poison.

492. If I understand your evidence rightly, you would consider that the present law which forbids the admixture of alum with bread is an unnecessary restriction?—No; I think that laws may be made in that way which may be applied in severe cases.

493. What do you call severe cases?—Cases in which more than what I would call a beneficial quantity is employed.

494. Would it be possible for the law to state what is a beneficial quantity?—I do not see the difficulty in a case of that kind. We have many cases, I think, in which it would be found that the law, if rigidly carried into operation, would interfere sadly with the industry of the country.

495. Have you had your attention called to recent cases which have occurred of the adulteration of flour?—I have seen them stated in the newspapers.

496. Have you formed any opinion as to whether those cases were cases in which the law ought to interpose?—There being a law at present existing upon that subject, I do not think it is one which requires to be altered.

497. That law strictly prohibits the use of alum?—Yes, it does.

498. Are you of opinion that alum ought strictly to be prohibited?—I think if it existed in such quantities that you could detect it by infusing the bread in water, you might say that it was carried to an injurious extent, and you might prosecute the party; but when water will not extract any alum from the bread or flour, alum being quite a soluble substance, I do not think it is a case for the interference of the law.

499. You do not think it desirable to interfere to prevent a person being defrauded by being led to purchase flour of an inferior quality, supposing it to be of a superior quality, in consequence of its being mixed with alum?—I do not know how he could ascertain that in respect of the introduction of alum when it was baked.

500. When the flour is still flour, I presume it would not be difficult to say whether there was alum in it or not; if there were alum in it, the object of the introduction of that alum would probably be to improve the appearance of it, and to pass off an inferior flour for a superior; is that, in your estimation, an offence which the law ought to recognise, or would you allow people still to mix alum with their flour for the purpose of improving the appearance of the flour?—The question is, whether it does not really improve the flour. If it has a beneficial action on the flour, if it renders it more commendable to the eye or to the taste, I cannot say that I think the law should interfere.

501. Do you think it justifiable to improve the appearance of an article which is not improved in quality, for the purpose of selling it as a superior article to what it really is?—We see that done so continually, that it is impossible to prevent it.

502. Therefore, your opinion is adverse to any law upon the subject of the adulteration of flour with alum, at all events, because you think the admixture of alum rather a benefit than otherwise?—To a certain extent; if by water you can extract alum from either the flour or the bread, certainly the quantity is injurious, and there, I think, you might interfere.

503. *Lord C. Hamilton.* But you think also that it is beneficial to add alum to bread?—At least it will be for others to prove that it is injurious, because it is clear that that is not alum which remains after baking.

504. Can any introduction of alum improve the nutritive qualities of the bread?—If the alum renders the phosphate of lime more soluble, then unquestionably it is an advantage to have it in bread, and if it prevents mouldiness, that is also an advantage.

505. Then you decidedly disapprove of a law which wholly forbids the introduction of alum into bread?—I would not have any law which too strictly interferes with the industry of the country. If you follow that out, you will find you must not allow a cook to put burnt sugar into your soup; you will

not

not allow the brewing of porter, because porter differs from ale only in the application of a quantity of burnt or highly dried malt. *L. Thompson, Esq.*

506. *Chairman.* You would allow persons to add a substance to make an article more commendable to the eye, in order that they may pass it off as a superior article?—I have mentioned two cases in which it is done, and I would not interfere with it. 29 February 1856.

507. Do you think it desirable to introduce a chemical agent into an inferior article to make it more commendable to the eye?—Certainly, if the public is not injured by it.

508. It is deceived, at all events, and pays a higher price for an inferior article?—Not if you generalize the practice; it is only moving a step up in the same ladder; the man who uses the best flour may do the same.

509. *Mr. Moffatt.* If all the bakers in London agree to use a little alum in their bread to make it look whiter than the bread in the country, is there any fraud committed on the public?—I do not see that there is.

510. *Chairman.* Is there any fraud in putting alum into the second quality of flour to make it appear of the first quality?—If you prohibit the use of alum in the first quality, there is; but if you can improve the other also in the same way, I cannot see where the fraud exists.

511. *Lord C. Hamilton.* You say there is no fraud, and the Honourable Member suggests to you that there is none, in the general use of alum. Do you think, if a baker were to put up a notice in his shop window that he sold white bread mixed with alum he would obtain many customers; would a baker, in fact, stick up such a notice?—No; I have seen the notice "Bread with the gin in it."

512. Why should not a baker announce to the public that he uses alum?—I do not know that it would do him any harm, for no one doubts that he does.

513. You think it would be advisable, at least it would not be reprehensible, to ask the bakers to advertise that their bread is a mixture of flour and alum; do you think the public would purchase such an admixture?—The thing is so well known that it would produce no difference, in my opinion.

514. Take the case of two bakers' shops, and suppose one of them affixed a notice to the effect that he sold bread mixed with alum, and the other living next door that he sold bread made of pure flour, do you think the public would go to the man who mixed his flour with alum?—No, certainly not. I have no doubt the public would fancy there was something injurious in the alum.

515. Then it is not the same thing with the public whether they buy bread with alum in it or not?—From the general impression which is abroad, the public, I have no doubt, would prefer going to the baker who did not use alum.

516. *Mr. Moffatt.* If the public were all as well informed on the subject as yourself, do you think that there would be any preference shown by them for bread in which there is no alum over bread in which there is alum?—I can only say that I eat bread daily in which I have no doubt there is a small portion of alum, but I have not the least objection to it. I have found alum in bread sold in other countries as well as in this. Not more than three or four weeks ago, I bought bread in two of the principal streets in Paris, and I have analysed it since I came back, and both those samples of bread contain just the same constituents of alum which the bread here contains.

517. In the same quantity?—Relatively I saw no great difference.

518. *Chairman.* You say that if the public had the option of buying pure bread in one place, and bread mixed with alum in another, they would go to the shop where the pure bread was sold, and not to that where it was mixed with alum?—They would go to the shop where the pure bread was sold, under existing circumstances, I have no doubt, if the alternative were put before them in that way; at the same time, the public go indiscriminately to bakers' shops now.

519. Is not that simply because they are not aware of the adulteration which takes place?—I have a difficulty in conceiving any person who is ignorant of the fact that alum is used in bread. That has been so notorious for years, that if a person told me he was ignorant of it, I should be inclined to doubt it.

520. You do not, in fact, believe that there is any bread made without alum being



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being introduced?—I do not think you will find any in this town, except bread which is made privately.

521. Mr. Moffatt.] What is the case with respect to the ordinary household bread sold by the bakers; is there any alum in that?—In the case of ordinary household bread, where colour is not an object, you may find it without alum.

522. Mr. Wise.] Do you like the French bread?—Yes.

523. I understand you to say you could not discover any difference between the bread which you bought in Paris, and bread bought in London?—Mine was not a quantitative but only a qualitative analysis; but judging of the relative quantities of white precipitate by seeing it, I should say there was no difference worth mentioning.

524. Do you think that the Council of Health at Paris are of your opinion, that alum is not injurious to health?—I cannot say what they think upon that subject; I can only relate the fact which is within my own knowledge.

525. Mr. Moffatt.] Is alum used by the bakers in the rural districts of this country?—That I cannot say.

526. You are aware that country bread is not so white as it is in London?—It is not.

527. The main advantage of the use of alum, I understand you to say, is that it makes the bread look whiter?—Yes, and it also gives a certain firmness of character to the bread; I have no doubt that, by coagulating the albumen, it gives firmness to the bread.

528. And it is not injurious to health?—I think not; at all events if it be, it requires investigation; it has hitherto been looked at upon the assumption that it is alum, which I entirely deny.

529. Chairman.] You think a law preventing the admixture of alum with flour is not necessary?—That is a different thing; you use flour for many other purposes besides making bread.

530. As applicable to making bread, you think it is not necessary?—Within certain limits, I think it is not injurious.

531. Mr. Moffatt.] If a considerable per centage of alum were used, would not it impart a considerable flavour to the bread?—If you put 500 grains to the quartern loaf, which is what I have done, it is perfectly impossible to eat the bread, it becomes too sour; bi-sulphate of potash is a singularly sour thing.

532. So that any serious admixture of alum would be detected?—Certainly.

533. And therefore the public palate would protect itself?—I have great faith in the public palate; and if the Committee will allow me, I will relate some cases which have come within my own experience, to show that it may be depended upon.

534. Chairman.] You do not mean to say that the public palate would always detect this adulteration?—No; but the lower orders in particular have a perceptive power which is quite astonishing.

535. You do not probably apply that universally; you would not say that the palate of the lower classes can detect the presence of Scheele's green in confectionery?—Those are substances which are insoluble, and which have no taste.

536. Lord C. Hamilton.] If the habit of introducing a larger quantity of alum obtained, would not the public taste become so accustomed to it that the practice might grow?—No; I think you have got to the extreme limit already.

537. You may fancy so now, because the practice is checked by the law, but if the law were repealed, and everybody might cater as he pleased to the public taste, might not the public taste be so modified as to lead persons to like that bread?—I think it will be time to legislate upon that subject when the event arrives.

538. Chairman.] The public taste has shown itself already in favour of exceedingly green pickles, whereas exceedingly green pickles are very poisonous; would you trust to the public eye in that instance, as you would to the public palate in the other?—Pickles are a sort of exceptional thing; they do not obtain much among the lower classes.

539. They are used by the higher classes?—Certainly; but there ought to have been an amount of intelligence among the higher classes which should have taught

taught them the danger of green pickles. I will state cases showing that the perceptive faculties of the lower orders are very strong indeed; I have seen examples of it in manufactures. For a considerable time I occupied a position with Messrs. Hawes, the large soap manufacturers. In the process of manufacturing soap it is of considerable importance to know when the process is finished, in other words, when the combination of the grease and the alkali is complete, because you may go on boiling after that, wasting your time and doing harm to the soap; that cannot be determined by the eye. I was compelled, when I first went to that kind of employment, to resort to chemistry for it, and it required something like half an hour for me to determine when the whole combination had taken place; but I found among the common men they could take up a portion of the soap and squeeze it in their fingers and then taste it, and in that way they could determine in two or three seconds that which required half an hour's trouble by chemical analysis in my case. I afterwards ascertained what this was, and ultimately I was able to determine the same thing; I found it was merely the power of taste which those men had acquired. Again, in another instance, I was employed in the dyeing of hats; certainly up to that time I always thought I knew a black hat when I saw it, but when I went into the manufactory the men were able to show me two hats which appeared to me equally black, but they said one is black and the other is not; it required three months before I was able by almost daily practice to determine which was black and which was not, and since that time I have seen very few black hats. I state this to show that their perceptive qualities are very great. In respect to beer in particular, many of those men would tell you very correctly indeed what brewer has brewed a particular sample of beer.

540. Have you also turned your attention to the adulteration of beer?—Yes, I have. In respect to beer, I have had considerable experience in the manufacture of the article, and I can only say that in the large breweries it seems quite impossible to adulterate beer. There are so many people about, and the excise officers come in so frequently, that it would be quite impossible to effect any adulteration there. As regards the publicans, I believe that the only thing they add to the beer is a small quantity of coarse sugar; that they invariably add; that is for the purpose of freshening up the beer in fact, and promoting a refermentation of the beer. The brewer for his own safety is compelled to keep it in what is termed a flat condition, and if it were sent out and sold in that state, the public would not drink it.

541. Mr. Moffatt.] Do they add water to the beer?—I should think not; they may add a little, but very little.

542. Chairman.] Your opinion is that burnt sugar is the only thing they add?—Not burnt sugar, but common coarse sugar.

543. Mr. Moffatt.] How is it applied?—It is dissolved in the beer, and the beer is left for two or three days to begin to ferment. The profit the publican derives from that arises from this circumstance, that the beer, in a proper healthy state of fermentation, when drawn into a pot by a machine, is so full of gas that it is impossible to fill the pot; with beer in a good condition, from a gallon you may draw perhaps five pots; you cannot get more into the pot than four-fifths of the proper quantity; so that the publican's profit is derived from that.

544. Have you examined many samples of beer?—A great many.

545. And have you universally found no admixture but sugar?—I have not noticed anything, except that in ales I have noticed what I had no doubt was an infusion of bitter orange peel; it communicates an agreeable bitterness to the beer in which it is used.

546. Chairman.] You are aware that it is in evidence before the Committee that a number of other articles are used?—I fancy that those may be exceptions, but certainly the general rule is as I state.

547. You have never, as I understand you, detected quassia, gentian, or cocculus indicus?—No, and I do not believe any of those articles can be detected; you may guess at them, but there is no chemical means of detecting them.

548. Supposing you do guess, you guess that there are no such things in beer?—I think in ales there is adulteration; that is, I have suspected, from the intense bitterness of some of the ales, that it could scarcely be altogether hops; but it is only supposition; I have no proof.

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549. Mr. *Moffatt*.] You have not analysed them?—It is impossible; I have attempted it in a variety of ways.

550. Do you know any of the purposes to which *cocculus indicus* is applied in this country?—I cannot conceive what it is used for.

551. You know it is imported?—It is, largely.

552. In larger quantities than it used to be?—Yes; I believe the consumption is increasing. I can scarcely conceive a motive for putting it into beer myself.

553. Mr. *Moffatt*.] What would be its effect?—The effect of beer is not immediate, but the effect of *cocculus indicus* is very rapid; a person drinking a certain quantity of pure beer would not from the alcohol experience any sensible effect for a considerable time; but if it were mixed with *cocculus indicus*, he would be stupefied almost immediately.

554. Mr. *Peacocke*.] Cannot you conceive in the case of a publican who had adulterated his beer with water, that he would be likely to put in *cocculus indicus* for the purpose of adding to it some of that intoxicating power which he had taken out by diluting it with water?—It is such a totally different sensation, that I can hardly think it; provided the effect were similar to that of alcohol it would be possible; but as far as I am concerned myself, there is no resemblance between the effect of *cocculus indicus* and alcohol.

555. The one has a stupefying, and the other a stimulating and exciting effect?—With myself it creates an oppression at the chest, and a tingling of the arms, and a loss of power instead of a gain of power.

556. Mr. *Cowper*.] In this experiment what quantity of *cocculus indicus* have you taken; you have probably taken it in a diluted form?—I have taken very small quantities, and I began with very small doses, being of course very careful about it.

557. Cannot you conceive that a small proportion of *cocculus indicus* in a pot of beer might produce that heady effect which strong beer produces, without producing the more powerful results you speak of?—No dose that I ever took affected my head in the least; it was confined entirely to the nerves about the chest, and there was a great prostration of strength, which was very sudden.

558. *Chairman*.] And you believe the consequence would be the same in most other subjects?—I have not been able to repeat my experiments on others, of course.

559. Your impression is that *cocculus indicus* does not affect the brain at all?—I do not think it affects the brain in such a dose as I ever took; in a large dose it might affect the brain by its reaction.

560. Viscount *Goderich*.] In what form have you taken it?—In small quantities as an infusion; I have infused it in boiling water and taken it in small quantities.

561. Do you consider that so taken it would have a similar effect to that which it would have had if infused in beer?—That I cannot say. I cannot think that the effect would be altered by the presence of a small quantity of alcohol.

562. Mr. *Cowper*.] Have you ever infused a small quantity in beer to ascertain its effect?—No; I preferred to take it pure and simple, to see what its effects were.

563. *Chairman*.] You cannot state of your own knowledge what the effects of a mixture of *cocculus indicus* with beer would be?—No.

564. You do not know what its effect upon the palate would be?—Its effect upon the palate would not be different; it gives a slight astringent bitterness, which would be communicated to the beer.

565. Not to such an extent as to enable you to detect it?—No.

566. Mr. *Moffatt*.] Have you examined many samples of beer in different parts of the metropolis?—I have examined a vast number. I was at one time employed in a brewery.

567. And the evidence which you have now given has reference to those extensive examinations?—To many hundred examinations.

568. Mr. *Sheridan*.] Beer obtained from publicans?—Yes.

569. And you never have found anything but sugar mixed with the beer?—I have found sugar, and I have the impression that some bitters have been used; but I could never detect them.

570. You have examined a great many samples of beer, and you have never found

found any other substance than that of sugar?—I have never found any direct evidence of the fact. I have been led to suppose that there was something else from the intense bitterness of some of the ales. In porter I have not found anything but sugar.

571. Mr. *Cowper*.] Will you inform the Committee what the tests were which you used in order to ascertain whether quassia or gentian might be found in malt liquors?—I am not able to tell you any test for them. I do not know of any.

572. Therefore your experience is simply negative; you cannot say that they do not exist?—By no means. I say I have even guessed that quassia might be present in some ales from their intense bitterness, but by chemistry you cannot determine it.

573. Have you the means by chemistry of detecting any other adulteration besides sugar?—Any mineral adulteration might be detected; sulphate of iron, for example.

574. No vegetable adulteration?—Not unless it has a very distinct character, certainly none of those which have been mentioned; it would be possible to detect strychnia.

575. Have you tested for strychnia in bitter ales?—Yes; I have never found anything of the kind, nor morphia.

576. Mr. *Sheridan*.] Besides bitter ingredients and sugar, can you certainly say that you have never detected *cocculus indicus*, salt, or water?—I have never detected *cocculus indicus*. As to salt, it is impossible to say whence it is derived. The hops themselves contain a very large quantity of saline matter; and according to the quantity of hops employed, you have that saline matter increased.

577. Lord *C. Hamilton*.] Is not there much beer in which quassia is used instead of hops?—That I cannot say.

578. Would salt be present derived from quassia as well as from hops?—No; there is no saline matter in quassia.

579. Therefore, whenever you have found salt you have attributed it to the presence of hops; can you say that in some of the instances that beer had not been made with quassia instead of hops?—If I found no saline matter, I should certainly say that hops had not been used.

580. Whenever you found salt you assumed that it must come from hops, without ascertaining whether quassia had been used instead of hops?—No; I say I cannot determine whether it has been put in, or whether it has come from the hops.

581. Have you ever bought beer or porter at the brewery, ascertained its composition, and then bought beer from the houses which were supplied by that brewery, in order to ascertain the difference?—I have repeatedly done that; in fact, it is the usual mode of ascertaining by the brewers themselves whether a man is doing his business honestly or not; it makes a great deal of difference to them, because they know whether to trust him or not. That was one of the purposes for which I was employed in the brewery in which I was.

582. You have been employed by the brewers themselves to prevent frauds among their retailers?—That is, to give them this warning, which they know to be an excellent one; if a publican adulterates his beer, the public taste soon finds him out, and he cannot go on.

583. Mr. *Wise*.] You state it as your opinion that all the porter sold in London by publicans is as good and wholesome as that sold wholesale by the brewers?—Yes, it is as good and as wholesome, and probably agrees better with the stomach than the other would do.

584. Are you aware, in reference to this point, that while the export and consumption of beer, and porter, and ale in Great Britain increases every year, the amount of malt and hops used is less?—The Honourable Member is no doubt aware that sugar is allowed by the Excise to be used in the manufacture of beer.

585. Were you aware of the fact to which I have called your attention?—I would merely suggest that perhaps sugar is coming into use instead of malt.

586. Mr. *Moffatt*.] How many years has sugar been allowed to be used in breweries?—Perhaps six or seven, or eight.

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587. Has it been allowed as many years as that?—I am only guessing; I should say that was the outside.

588. It would be quite possible, if sugar has been allowed in breweries where it was previously prohibited, that that may account for the diminution in the consumption of hops and malt on which duty is paid?—I think you must take that into consideration in drawing any comparison.

589. What test have you employed to discover whether *cocculus indicus* was in beer or not?—We have no test for it.

590. You never discovered the bitter taste which *cocculus indicus* imparts?—*Cocculus indicus* has not a very bitter taste; it has an astringent taste, but not greater than the hop itself. I never experienced that effect from any beer which I have drunk, as being that which I knew and could recognise as the effect of *cocculus indicus*.

591. Viscount *Goderich*.] You said that the beer sold by the retailers was in your opinion as good and wholesome as that sold by the brewers; do you mean to say that you believe that water is not added very frequently to beer sold retail?—You may find small dealers, who are ruined already almost, and are determined to carry on business as they can, but if you go to any of the large dealers in beer, persons who are drawing two butts of beer a day, of which there are a great many about town, they have no time to make those additions; and in the second place, people in the neighbourhood are so habituated to the taste of good beer, that their houses would be deserted; they can have no inducement to do it; they have an ample profit upon the beer, even selling it as they do.

592. *Chairman*.] Do not you think that they are sometimes desirous of making the ample profit larger?—There is this limit to it; a man is supposed to have some knowledge of his business, and to know what will do and what will not.

593. Do you know what the profit is between the retail and the wholesale prices of beer?—I know beer is generally sold from 32 s. to 34 s. a barrel, with five per cent. off on payment; that is 36 gallons; that would be necessarily less than 3 d. a pot; if it be 36 s. it would only be 1 s. a gallon. Therefore the publican's beer costs him very little more than 2 ½ d. a quart. If, however, to that beer he has added a small quantity of sugar, and allowed it to commence fermentation, it is impossible in drawing the beer to fill the pot full in reality, therefore the publican makes six pots out of five pots; now that of itself yields an enormous profit.

594. Mr. *Moffatt*.] Thus the public lose in the quantity of beer they buy?—They get a less quantity.

595. Is not it your opinion that it would be beneficial for the interests of the public to have an Act of Parliament passed to prevent the practice of vending beer frothed?—If you could do that it would be protecting the interests of the public undoubtedly; or if you could make the pot a little larger.

596. Mr. *Wise*.] At what price do the retailers of beer sell this article you have spoken of?—The lowest price I have ever known is 3 d., that is, as they say, in their own pots; 3 ½ d. is as low as you will buy it in any part of town.

597. According to your experience, the publican gets now nearly a penny a pot upon all the beer he sells?—Yes.

598. Lord *C. Hamilton*.] You think therefore that he would be satisfied with his fair profit, and not add anything to the beer to increase it?—It would be 25 per cent. profit; and as it is a ready money concern, I think it is ample.

599. You think he would be satisfied with it?—I really think so.

600. You have stated that you know that there is a great deal of *cocculus indicus* coming into the country; can you state to the Committee any fair and honest purpose for which that is used?—I do not know of any.

601. You are a chemist of great practice; cannot you state to the Committee any legitimate and fair purpose to which this increasing importation of *cocculus indicus* is applied?—I cannot think of anything at the present moment; of course there are secret processes carried on for various purposes.

602. Viscount *Goderich*.] You stated just now, as your reason for thinking that there was so little adulteration practised by publicans, that you did not see any advantage they would gain from practising it?—Not a permanent one.

603. You do not agree with the opinion of Professor Redwood, to the effect that publicans mix water with their beer for the purpose of concealing their

their profits from the public?—Of course I do not agree with that; in fact, I would say, of my own knowledge, that it is not so. I have had great experience in this matter, and I suppose Professor Redwood has not.

604. *Chairman*.] Is there any other article to which you wish to direct the attention of the Committee?—I wish to speak of vinegar; that is said to be very extensively adulterated with sulphuric acid, and no doubt some of the lower qualities of vinegar have been so; but I think that in that respect there has been great exaggeration. I will relate one case which occurred to myself, to show that the editor of the "*Lancet*" published a statement with respect to vinegar belonging to Messrs. Hall & Evans, of Worcester. They applied to myself and also to Dr. Ure on the subject. They declared there was nothing of the kind in their vinegar, and they brought me a small sample. I tested it in a way which perfectly demonstrates the existence of free sulphuric acid, if there exists only so much as one per cent. In this vinegar I found nothing; upon which they desired me to go down to Worcester and go through the whole of their works. I did so, and examined their works. They are very large vinegar manufacturers; and I made a calculation from the quantity of oil of vitriol, as it was called, which had been found in their vinegar, that taking the whole quantity of vinegar they produced, it would require something like 25 carboys of oil of vitriol a week to produce the adulteration in question. It would be quite impossible, of course, to have brought anything of that kind into the manufactory without every one seeing it. I found there was not a particle of oil of vitriol on the works. In examining the water of which the vinegar was made, I found it contained an enormous quantity of sulphate of lime. I have no doubt the mode adopted for testing the vinegar was by salts of baryta, and that the sulphuric acid combined with the lime had been taken to be oil of vitriol. I examined the whole of the vinegar belonging to the establishment, and I examined a great many samples from their warehouse in London, and there was no oil of vitriol in any of them. This fact was certified to the editor of the "*Lancet*," but he declined to make any apology. They consequently applied to other chemists; I think to Professor Graham and several others; in fact they must have gone to an enormous expense, 150 l. at least. After a time, however, the editor of the "*Lancet*," instead of making a proper apology, put in a very bare and meagre statement, to the effect that he found Messrs. Hall & Evans's vinegar was to be exempted from the list of those containing oil of vitriol. These people, as I said, had gone to an enormous expense; and I think, therefore, it ought to teach us how dangerous it is to deal in this way with any manufacturer. I do not question Dr. Hassall's ability, but we are all liable to make mistakes, and a respectable manufacturer ought not to be attacked in this way, and his character ruined by a mistake of this kind. For if you establish a committee of persons to decide upon these cases, they must be as liable to make mistakes as any other persons, and how is a manufacturer in that case to rectify an error? In this particular instance it cost the manufacturer 150 l. to do so, and when done, I very much doubt if the mischief caused by the original statement was ever remedied.

605. What may be your method for testing for sulphuric acid in vinegar, as distinguished from that which was employed by those who wrote in the "*Lancet*"?—The process I adopted upon that occasion was a very simple one. I have here two samples, one containing about one-half per cent. of sulphuric acid, and it will be seen by only exposing a single drop of this upon a little plate, at a steam heat for five minutes, the vinegar containing the sulphuric acid will become perfectly black, and the other which does not contain it will remain uncoloured. A small white plate is put over a vessel containing water, and the water is made to boil, so that the steam plays against the lower part of the plate. Under these circumstances, take a single drop of the suspected vinegar, and drop it upon the plate; if it contains oil of vitriol, the vinegar will evaporate, and the acid will concentrate till it is sufficiently strong to act on the organic matter of the vinegar, on which it acts and chars it. If it contains no oil of vitriol it only evaporates, and leaves a yellow stain. That however is only a test to prove whether there is sulphuric acid present; to determine the quantity we must make an analysis, which is more difficult.

606. You think there are other methods which would lead to mistakes, provided sulphate of lime was in the water?—Unquestionably so.

607. What is your opinion upon the general subject of adulteration; I

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*L. Thompson, Esq.* gather from what you have said that you think bread and beer are not adulterated at all, or only in such a way as not to be injurious to the public health. 29 February 1856. Is that the conclusion at which you have arrived in regard to articles of food and drink generally?—The Committee has mentioned the case of pickles, which I thought was notorious, because it is stated in every chemical book; every chemical book will tell you that if you put an iron knife into pickles, and it becomes coated with copper, the pickles are not fit to be eaten.

608. Putting aside that exceptional case, do you think that articles are sold generally in a pure state?—Excepting confectionery, taking the great mass of the food which the public eat, I have never met with any instance of disease caused by any kind of food being adulterated.

609. You do not think that Cayenne pepper is ever adulterated with red lead? I have not seen a case of disease brought on by it. If Cayenne pepper is adulterated with red lead, as possibly it may be, that ought to be stopped of course. I have no question that there ought to be legislation upon this matter; but I think it ought not to interfere with the industry of the country.

610. Have you in your own mind any plan by which such matters might be investigated without an interference with the industry of the country?—In the case of flour and in the case of beer, if anything is found in them which is injurious, you may summarily prosecute the man. He may be brought at once before the magistrate and punished, and I think that is sufficient.

611. Would you recommend a law giving a similar summary power in the case of the adulteration of other articles?—I think I would recommend an extension of the same law; it works very well, as far as I see.

612. How is the law in reference to adulteration to be put in practice?—I see instances of its being so stated in the newspapers that under the present law parties can be brought up summarily and punished.

613. You see no objection to a similar machinery for the purpose of checking adulterations in other articles?—In any article, in fact, which is proved to be injurious to the health of the public.

614. *Mr. Wise.*] Are you aware of the loss of time which a poor man would have to undergo in a case, for instance, of his buying bad flour?—I am not; but I think you cannot be too cautious when you have the character of a respectable man to deal with. In the case of tobacco, the Excise formerly exercised a power of this kind; and I know many cases in which it was improperly exercised; for instance, I know a case in the City, in which I was engaged. A most respectable tobacco manufacturer had a servant with whom he had a quarrel. Now, it is not allowed to introduce sugar into tobacco. Good tobacco contains sugar naturally, but you must not introduce it, according to the Excise regulations. However, this man, who probably had never mixed anything with his tobacco in his life, was seized upon one day by the Excise, and a quantity of sugar was found in his tobacco; you could take it up with a spoon. There was no defending such a thing, and all he could say was, that he had not put it there, nor had it been put by his will, and he was satisfied that there had been some collusion.

615. *Mr. Moffatt.*] Was there any sugar found in the manufactured tobacco on his premises?—Not any. He was fined very severely. It was afterwards, however, demonstrated that this man whom he had quarrelled with had communicated with the Excise, he himself having put the sugar upon the premises. I will relate another example in which the Excise themselves committed an error. That was the case of a tobacco manufacturer at Gloucester. I was summoned to go down to Gloucester to defend that case; the assertion was, that the man had put liquorice into the tobacco; the quantities they pretended he had introduced were very small; they admitted that they had no chemical test for it, and they admitted that they had not employed the microscope. The magistrates at last compelled them to say how they found out that the substance was there. To the amusement of every person there they declared they smelt it. Now, there could not have been more than 15 lbs. of liquorice in the whole manufactory, and there must have been many tons of tobacco; and when you recollect the strong odour of tobacco, and that liquorice has scarcely any smell at all, the magistrates very justly said at once, "We cannot entertain the charge." In other cases, however, parties have been condemned upon quite as little evidence as that.

616. Great injustice is, in your opinion, frequently done by the rigid interference

ference of the Excise with the assumed or asserted adulteration of tobacco?—*L. Thompson, Esq.* I am certain of it.

617. *Lord C. Hamilton.*] It appears from your statement that the Excise only depended upon the same means of detection, viz., the evidence of their senses, which you have suggested would be sufficient for the public, according to the illustrations which you have given in the case of soap and the colour of hats?—I would not recommend a prosecution upon such a test as that. Here you had a man's character at stake, and his money too; and though that person was successful, it put him to enormous expense; the Excise threatened to throw the case into the Court of Exchequer, and would have done so had not the "Daily News" taken up the matter, and remonstrated about it.

618. *Viscount Goderich.*] Did I understand you rightly to say that you have been employed to give evidence in cases of suspected adulteration?—I have generally been employed against the Excise.

619. In favour of parties accused of adulteration?—Yes; wherever I have found the case an honest case, I have given evidence, but I have repeatedly refused to do so. When I have found that the man was really adulterating, I have always said, "You must compromise this, there is nothing to be done;" and I have met with many such cases.

620. In what instances?—In tobaccos in particular.

621. *Mr. Sheridan.*] In what other articles?—In tobaccos chiefly; certainly in some other things.

622. Will you mention the other articles?—I have known pepper adulterated.

623. *Viscount Goderich.*] What substances have you found in it?—Chiefly farinaceous matter, such as starch or powdered rice.

624. *Mr. Moffatt.*] Matters not prejudicial to health?—No.

625. *Mr. Sheridan.*] And not advantageous to the public?—Not to the public revenue.

626. *Mr. Moffatt.*] Were they disadvantageous to the public health?—They would do neither harm nor good; I believe the addition of a small quantity of sugar to tobacco is an advantage: the best tobaccos always contain sugar.

627. *Viscount Goderich.*] You mean to say that an inferior quality of tobacco mixed with sugar would be equal to a superior quality of tobacco?—They are able to sell it better, and therefore one would infer that it looks better, and I dare say sugar does communicate good qualities to it; it brings it nearer to the natural standard.

628. *Mr. Peacocke.*] You have never detected any other description of adulteration in tobacco except sugar?—Yes, I have detected nitrate of potash.

629. *Mr. Kinnaid.*] What is the effect of nitrate of potash?—Nitrate of potash, I apprehend, is for the purpose of making the tobacco burn better.

630. Has it any deleterious effect?—No; there is nitrate of potash naturally in tobacco; good tobacco always contains it.

631. *Mr. Peacocke.*] What else have you found?—I think I have detected some of the salts of ammonia; sal ammoniac I have detected, which ought not to exist in tobacco; I have also detected some leaves of improper plants, such as the common garden rhubarb.

632. Do you know the plant called the calves' plant?—Yes; I have not detected that.

633. I am told that in some counties it is cultivated for the purpose of putting with tobacco?—It is sometimes smoked alone.

634. Have you frequently detected the leaf of some other plant?—I have detected the rhubarb and the coltsfoot to some extent.

635. Could they be detected by the eye?—No; I only detected it by the microscope; the hairs upon tobacco are so peculiar, that you can readily see what is not tobacco, and then, by comparing it with other samples, you discover what it is.

636. Have you found spurious leaves in cigars?—No; I have examined cigars very little.

637. Have you extensively used the microscope for the purpose of detecting adulteration?—Yes, for years.

638. *Mr. Wise.*] You said that you thought the public are amply protected by the 6th & 7th of William the 4th with regard to the adulteration of flour; are you aware of the trouble which it gives to any person to prosecute under that Act?—Whatever the trouble may be, I think the responsibility you cast

*L. Thompson, Esq.* upon the individual is so great, that I should hardly think of diminishing the labour.

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639. Suppose a poor man brings flour to me, and I have it analysed, and find plaster of Paris in it, do not you think that it would be much better for me to be able to refer that poor man to a public inspector, or a public prosecutor, than that he should himself undertake to prosecute the miller, and obtain a search warrant to search the premises?—I do not think I am qualified to deal with legal questions myself.

640. Would not it be better to have a public inspector who should be able to go to the mill, and look at the flour, and hear the complaint of any poor man, than to leave the poor man to go to a justice of the peace, lay an information, and get a search warrant, which would take two or three days of the time of the man who prosecutes?—In that case, perhaps, some other plan might be adopted; but I do not think that I could enter into that subject. I have found it to be a most serious thing to have the character of a large manufacturer interfered with; the news spreads rapidly that something has gone wrong.

641. Do not you think that if a man sold plaster of Paris mixed with flour, he should be punished?—That depends upon whether he put it in, or it had got in in some other way without his knowledge.

642. Supposing you found 20 or 30 sacks of plaster of Paris in a mill?—I would submit, that in the case of a man who has two bad coins in his pocket, which a man may have quite unconsciously, it would be rather hard to drag him up, and condemn him at once.

643. Do not you think it would be a very suspicious circumstance if you found several sacks of plaster of Paris in a flour-mill?—That depends upon whether it were wanted for the purposes of the mill. I can easily conceive that a miller might require plaster of Paris.

644. For what purpose?—For plastering. If indeed I found a particular quantity of sulphate of lime of a very fine quality in a flour-mill, I might assume that it was there for a bad purpose; but a man would not use the common description of plaster of Paris to mix with flour.

645. Do not you think it would be a great protection to the public, if, in the metropolis, or in the large provincial towns, there were certain inspectors appointed who should be in communication with the Board of Health, who could from time to time, when they thought that adulteration was practised, interfere, for the purpose of its being exposed and punished?—I see no objection to that; but I would point out that even the Excise, which is the only thing of the kind which we have in this country, has, to my own knowledge, in several cases committed gross injustice, sometimes inadvertently, and sometimes, it would appear to me, from ignorance. If you had a public prosecutor of that kind, at any rate let the manufacturer, if he is found right, recover his expenses from him; but in the case of the Crown that is not so now. If a man has an action brought against him, he may be proved to be perfectly innocent, but he has no remedy for the expense to which he has been put, the Crown paying no costs.

646. If a public prosecutor were appointed, do you think it would have a beneficial effect in preventing adulteration?—It would calm the public mind, and there would be no objection to have such a person if you can regulate his proceedings so that he shall do no harm.

647. If an analysis is made of an article, how can the person be injured?—The question must arise, having found the material in the flour, how did it come there? had the miller a guilty knowledge of it?

648. Who could put into the flour but the miller?—I have shown one case in which sugar was put into tobacco where I am convinced that it was not put in by the man himself. The manufacturer, therefore, will be left to the mercy of servants, and a malicious servant can ruin his master at any time.

649. I gather from your evidence that you think the appointment of a public prosecutor who might look after these adulterations would be beneficial to the public?—Yes, if his functions are so regulated that he can do no harm, and if he were made responsible for the proceedings in case it was shown that they were groundless. In case the public prosecutor brings an action against a man, and puts him to expense, and so on, let the man have power to recover those expenses.

650. Would

650. Would you draw any distinction between adulterations simply of a fraudulent character, and those which are positively injurious to health?—I would. I would make a difference in the amount of the fine or the length of the imprisonment. I think adulterations which are injurious to health could scarcely be too severely punished.

651. *Mr. Moffatt.*] The Excise have extensive powers in dealing with the adulteration of tobacco, have not they?—At one time they had too great power.

652. Have those powers lately been modified?—The fact is this, that I think the Excise have seen that they could not carry out their views, and since the "Daily News" took up the matter, they have been very quiet. I notice that *Mr. Phillips*, in his evidence, says, he does not think there is any adulteration of tobacco just now, and I do not know that there is any great difference between the present time and formerly.

653. Is it within your knowledge that there have been many instances in which complaints of adulteration have been made, but on an inquiry being instituted, they have not been sustained?—A vast number of them were not sustained.

654. In those cases was great injury inflicted upon the persons so accused by the Excise?—Unquestionably.

655. It was a circumstance of permanent injury to a tobacco manufacturer, to be accused by the Excise of adulterating his tobacco?—Unquestionably.

656. And he had no remedy for that wrong?—None whatever. To show how mistaken the Excise may sometimes be, I will mention the case of a highly respectable brewer in this town, who wished to export ales. In order to export ales they must be brewed of a certain strength, or you do not get the drawback. This brewer was determined to brew an honest article, and he brewed it of exactly the proper strength; now it is the custom in the trade to brew a little stronger than the proper strength; of course, I suppose, to make allowance for the clumsiness of the Excise. In this instance the gravity of the ale was precisely that which would enable the brewer to recover a small duty. However, the barrels of beer were sent to Liverpool, and a great many there were of them; I believe as many as 1,600 barrels of beer. There they were tested by the Excise. The Excise said, this is not strong enough, and we will not allow the drawback; there is some half pound or something wanting. The difference was very trifling, and we suggested that perhaps the mode of analysis they had used might not be sufficiently accurate to determine it. We offered to give them proof from our own brewing books that the wort was of the proper strength at the time it was brewed. The contest went on, and it seemed as if it would never have an end; but after 14 or 15 months, they returned the drawback, having found that they were wrong.

657. *Chairman.*] I understand what you desire to show by your evidence at the present moment is, that great caution should be exercised before any proceedings are taken against persons on mere suspicion?—Certainly.

658. You probably think that that does not obviate the desirability of some measure being adopted to prevent and punish adulteration, provided means are at the same time taken to prevent the occurrence of oppression and injustice?—Certainly.



*Mercurii, 5<sup>o</sup> die Martii, 1856.*

## MEMBERS PRESENT:

Mr. Scholefield.  
Mr. Moffatt.  
Mr. Sheridan.  
Mr. Kinnaird.  
Mr. Gregson.  
Mr. Otway.

Mr. Peacocke.  
Mr. Wise.  
Viscount Goderich.  
Mr. Cowper.  
Viscount Ebrington.

WILLIAM SCHOLEFIELD, Esq., IN THE CHAIR.

*Lindsey Blyth, Esq., called in; and Examined.*

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659. *Chairman.*] YOU are an analytical chemist and lecturer on Natural Philosophy at St. Mary's Hospital, Paddington?—I am.

660. How long have you held that or any other office in St. Mary's Hospital?—I was appointed as the resident dispenser in 1851, when the hospital was opened.

661. What are the duties of your office?—The duties of my office gave me the entire charge of the dispensary and the laboratory of the hospital. At that time there was no apothecary appointed, and I fulfilled the duties of the apothecary so far as regards the examination of drugs.

662. I presume the examination of drugs is part of your duty at the present moment?—No. I gave up the duties of dispenser in 1854.

663. How frequently do you make an examination?—It is conducted every quarter; samples are sent for to different wholesale houses, and it was my duty to examine them previously to their being laid before the medical committee, so that I might give them a report as to which samples were best for selection.

664. Can you give the Committee any information as to the result of your investigations at different times; have you found the drugs pure?—In the first instance, we had to get them from a great number of wholesale druggists, in order to choose those which should eventually supply the hospital. In the first supply there were certainly a great many of an inferior quality; I would not say exactly they were adulterated, but there were natural drugs of an inferior quality.

665. What do you mean by an inferior quality?—Drugs which would be slightly impaired from containing impurities; those articles of *materia medica* which do not undergo any chemical preparation beforehand are supplied in their natural state, such as roots, and barks, and gums; others, again, are chemically prepared and undergo a process of preparation; such articles ought to be of a known strength, but the natural articles are of different degrees of purity, according to the climate or the country from which they come.

666. With regard to the drugs themselves which you speak of as having been inferior in quality, you have not found any actual adulteration in them, but they have simply been of an inferior quality?—Simply of an inferior quality.

667. Can you name any articles which you would call drugs which come to this country in their natural state, besides those which you have already mentioned?—We received a sample of cinchona bark, which is very largely employed in hospital practice as a tonic, which was not cinchona bark at all; it did not contain a single trace of any of the active principles which give its virtues to that bark.

668. In fact it was some other bark?—It was some other bark.

669. *Mr. Sheridan.*] You do not call that merely an inferior article, do you?—Yes, I call it an inferior article; because I believe it was not sent in wilfully, but from ignorance.

670. *Chairman.*]

670. *Chairman.*] Though the person who sent it in may have sent it in ignorance, it must have been introduced into the country fraudulently; the person abroad must have known whether it was a genuine article or not?—Yes; I should attribute the blame to the parties who allowed it to be introduced.

671. That really was a fraudulent substitution, was not it?—It was. With respect also to the natural article of lime-juice, which has lately been largely employed in hospital practice, and also on board ship, professional chemists say that this lime-juice should contain two per cent. of citric acid, which is supposed to be the active principle upon which its virtues depend. In an examination of four samples, I found that not one of them contained one per cent. The best article of the four which were sent in, contained about three-fourths per cent., and the others were diluted to much greater extent, containing only one-fourth per cent. Comparing the samples with the juice of the lemon, I found that the best of them must have been diluted at least with an equal quantity of water, and the others to a greater extent.

672. I presume the two per cent. represents really an important quantity in citric acid?—I believe it is the highest quantity which has been found.

673. If the quality which you speak of contained only one per cent., I presume it would be very ineffectual for the purposes for which it is administered on board ship?—One per cent. is the quantity stated for the making of artificial lime-juice; the best of the samples sent in, I found not to contain one per cent.; taking the artificial lemon-juice as the standard of comparison, I found 700 grains of the lime-juice to correspond with only 582 grains of the standard solution.

674. Would that materially affect the value of the lime-juice as a medicine?—If a medical man thought he was giving 700 grains and he only gave 582, it would diminish the effect in that proportion; it being given at the rate of a pint a day, and sometimes more in certain acute diseases.

675. *Mr. Sheridan.*] Would not medical men be aware that the full percentage would not be there?—I should say not; they would take their knowledge principally from books.

676. *Chairman.*] They would assume that it contained the full quantity, unless they tested it?—Yes; if they referred to the statements in standard works, they would believe they were giving nearly two per cent.

677. Have you found that to be the case in many instances?—In nearly all the samples of lime-juice it was the case.

678. *Mr. Moffatt.*] You believe that the deficiency which you found to pervade all those samples, allowing it to be a deficiency, is one which applies generally, but which is unknown to the faculty?—Quite so.

679. The faculty never take any trouble to analyse drugs to know whether they are pure or mixed?—Quite so.

680. *Chairman.*] Will you mention some other leading articles which you have examined in the same way?—The next thing which I examined was a chemical preparation, an article of the Pharmacopœia largely used in febrile diseases; the sweet spirit of nitre. This sweet spirit of nitre, if carefully prepared, should be an ethereal preparation, and entirely free from water; when water is added to it, it undergoes decomposition; a free acid is produced, and quite a different compound is the result. I have notes of no fewer than five samples of sweet spirits of nitre, and only two of them were of a genuine quality.

681. What was the condition of the other three samples?—Of the other three samples, one was diluted with water, that contained a great quantity of free acid; its specific gravity was increased. The other two were slightly acid, and merely badly prepared; they contained no water.

682. In what disorders is sweet spirit of nitre used?—It is used in a great many diseases; chiefly as a sudorific in febrile disorders.

683. I presume those samples which you spoke of would produce very little effect?—They would produce a contrary effect to that which was desired.

684. If a medical man were administering them for the purpose of producing a sudorific effect, he would find his preparations produced a very different effect?—Yes; instead of giving an ethereal preparation, he would be giving a preparation containing nitrous acid. The next article I examined was the solution of ammonia.

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685. For what purposes is that used?—As a stimulant, principally as an external application. It is ordered in the Pharmacopœia of two strengths, a stronger and a weaker solution. The stronger solution should contain 30 per cent. of ammonia; the weaker solution should contain about 10 per cent. Out of the numerous samples which were sent in, there were only two which were of the genuine strength.

686. Of both kinds?—Yes; many of the samples of the weaker solution were labelled as of the greater strength; showing that if we had followed the directions of the Pharmacopœia for diluting that twice with water, we should have obtained a solution of ammonia which was of no value at all; one, indeed, which was labelled as of the stronger strength, had itself been diluted, and contained only six per cent.; still being labelled as the stronger solution of ammonia.

687. Mr. *Sheridan*.] Were all those samples which were sent in of the same price?—The prices varied; the curious fact was, that that which contained only six per cent. bore the highest price.

688. Mr. *Moffatt*.] The vendors, relying upon the ignorance of the people at the institution, leaving them to accept the inferior quality?—Quite so.

689. Mr. *Sheridan*.] Are not they aware that you always examine the drugs?—They were not aware of it at that time; that is one of the points I wish to bring before the Committee.

690. *Chairman*.] With respect to other articles besides solution of ammonia, have you turned your attention to the price as well as to the quality?—Yes.

691. What has been the result of your examination?—The result that I have arrived at is this, that those who supply the most genuine articles are generally the most liberal in their prices.

692. Their prices are the most moderate?—Yes; showing that the adulteration is practised for the purpose of gain.

693. Mr. *Kinnaird*.] How long has the hospital with which you are connected adopted the system of a check upon the drugs?—From the first. I am now speaking of the first examinations, which took place in 1851.

694. Mr. *Wise*.] You mean to say that the adulteration of drugs does not arise so much from competition, as from intentional dishonesty?—The intention of making a greater gain.

695. *Chairman*.] What other articles have you examined?—The next article that I examined was chloroform, a most important article, inasmuch as it is administered in most surgical operations.

696. And the application of it is at times a very critical matter?—A very critical one.

697. Will you state the result of your examination?—The result was that there was not a single sample sent in, in the first instance, which was fit to be administered.

698. They were not simply adulterated, but to such a degree that they were not fit for use?—They were not fit for use. That may arise from the article undergoing a spontaneous decomposition. If it is badly prepared in the first instance, or when it contains any of the contaminations which arise in the process of manufacture, it undergoes spontaneous decomposition.

699. Could you distinguish between those samples which were adulterated, and those which were deteriorated?—Yes; I drew up a short sketch for the guidance of the Drug Committee, which, as it is not very long, I will beg to read: "Chloroform should have a specific gravity, according to Liebig, of 1.480, but is now almost constantly produced by Soubeiran at 1.496; Dr. Simpson says 1.500. It is in such great demand that it is empirically manufactured by persons that know nothing of its composition, and it is rare to find a sample absolutely pure. There has been found, in different specimens, alcohol, chlorine, hydrochloric acid, hydrochloric ether, and compounds of methyle, besides water and fixed substances. Chloroform may be good that has a specific gravity of 1.480, if it will stand the following tests, but it is better to have it of a higher specific gravity. It ought to evaporate entirely on the hand without leaving any odour; it ought to give no reaction with neutral litmus paper, or nitrate of silver; put into a graduated tube, then shaken with twice its bulk of distilled water, and allowed to stand two or three hours, it ought not to diminish sensibly in bulk; when put into a tube, in contact with concentrated sulphuric acid, the acid ought not to become blackened. If chloroform

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chloroform will stand these tests, all easy of practice, the medical man may safely rely on it. It should be kept in a well-stopped bottle in a darkened cupboard." The light causes it to decompose; and putting our own samples through those tests, I found none of them would stand them.

700. Mr. *Kinnaird*.] Now you find it to be otherwise?—I re-purified the samples which were for use in the hospital, and we had not a single accident all the time I was connected with the staff, although it was administered in many serious cases. With respect to hydro-chloric acid, which is given largely as a tonic to patients, the first sample which we had sent in to us contained four or five grains of arsenious acid in the fluid ounce. Among our opiums I found some of them were really adulterated with extraneous matters, poppy capsules, and sand, and powder of all kinds; but the great mass of the samples which were sent in were of a very fair quality.

701. Were those which were adulterated seriously so?—Very seriously; some to the extent of 75 per cent.

702. That opium would have been useless?—Yes.

703. Mr. *Sheridan*.] Do you suppose that opium to have been adulterated in this country?—No; I should think it was adulterated abroad.

704. Mr. *Otway*.] Was this East India opium?—Smyrna opium.

705. Was East India opium adulterated?—We have no samples of East India opium.

706. Mr. *Wise*.] Opium of necessity is adulterated, if I may so use the expression, to some extent, is it not; it must be mixed with something to enable it to form a mass?—I believe it may be inspissated to such a substance as to be sent here without the admixture of any impurity.

707. Mr. *Moffatt*.] Have you ever known opium to be imported into this country without any impurity?—I do not know it for a fact.

708. *Chairman*.] You have given us the result of your examinations in 1851, and probably for some short time subsequently; will you now favour the Committee with the result of your examinations when it became known to those who supplied drugs to the hospital that an analysis was uniformly practised?—The first result was, that some of those who supplied the hospital withdrew from the competition, and amongst them those who had supplied the adulterated articles.

709. They never sent again?—They did not wish to continue the supply to the hospital. With respect to others, I found the articles which had been of an inferior quality were improved, and chemical products were sent in nearly always in a very pure state.

710. Have you found that to continue up to the present time?—It has, I believe, continued up to the present; I am not the dispenser now. I have been appointed to another office; but I believe the system has continued, and has been found very beneficial.

711. You trace to the fact, that the dealers know that an analysis will take place, the improvement of which you speak?—Quite so.

712. Have you turned your attention also to other adulterations than those of drugs and medicines?—I was consulted by the house and finance committee with respect to several articles supplied as articles of food; the bread was of a very good quality; all the samples which were sent in for competition were of a very good quality. Some of the samples of milk were diluted, and one sample that I examined contained chalk; that was the only instance in which I have found chalk.

713. Was all this milk supplied at the same price?—That was not my department; I had simply to make a chemical report upon the articles.

714. Mr. *Moffatt*.] What per-centage of chalk did you find in the milk?—A very small quantity at the bottom.

715. Mr. *Otway*.] Was the bread all good?—I found starch granules of the potato in every specimen; I have never examined a specimen of bread in which I have not found starch granules of the potato.

716. *Chairman*.] Why is potato starch used?—Potatoes are supposed to give the bread a lighter appearance.

717. Is it used in small quantities?—Yes.

718. Mr. *Kinnaird*.] There is no objection to that in point of health, is there?—None at all.

719. Mr. *Moffatt*.] It is rather beneficial to have the bread lighter, is it not?—It is.

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720. Mr. *Wise*.] You have not mentioned the article of rhubarb, which is very largely used in this country; have you had your attention directed to that?—Yes.

721. Have you found it largely adulterated?—No; we used to get the root and make the powder ourselves.

722. Are you not aware that a very large quantity of rhubarb is grown in this country for the express purpose of being used by the grinders to mix with the foreign rhubarb?—I do not know for what purpose they use it, but I know it is grown to a great extent. In fact, on the recommendation of Dr. Pereira, and the authorities at the London Hospital, it was tried at our hospital as a cheap substitute for the other; it may be procured at 3*d.* a pound, whereas the other is something like 3*s.* The effect, however, was so different that a member of the drug committee observed that he had to give his patients a rhubarb pudding before he could make it act, so that its use was abolished.

723. Have you ever heard that rhubarb has been mixed with flour and turmeric?—Yes, I have.

724. Can you state any cases which have come under your knowledge?—I have not examined them because, as I before observed, at the hospital we obtained the root rhubarb.

725. Is not it the case that English rhubarb is largely used in London by grinders to mix with foreign rhubarb?—I have no experience of it.

726. Mr. *Kinnaird*.] Your experience is probably confined to experiments made while in connexion with the hospital?—Not entirely. I have had 15 years' experience in the study of medicine, and pharmacy, and chemistry, both in London and Paris, but not in connexion with any wholesale drug-grinding department.

727. Mr. *Wise*.] What do you suppose an individual at Banbury should grow 20 tons of roots in a year for, if it is not to be used for mixing with the foreign rhubarb?—I think it was greatly cultivated on the strength of Dr. Pereira recommending it.

728. Are you aware that since it has been discountenanced the quantity grown is much less?—I am not aware that it has been discountenanced; it is, I believe, still used at some of the London Hospitals.

729. Mr. *Otway*.] You have mentioned that you have had some experience in Paris; did you make any analyses while you were employed there, of articles employed either as drugs or as food?—Yes.

730. What was the result?—The result was that I never found an article which was adulterated.

731. Neither a medicament nor an article of food?—No.

732. *Chairman*.] To what do you trace that difference?—I trace it, in the first place, to their superior education. The pharmacutists there are obliged to undergo an examination before they can obtain a licence to practice their profession of pharmacy; and, in the next place, they are visited annually by a Board of Examiners.

733. Mr. *Moffatt*.] What articles of food did you test in Paris?—I did not test articles of food; I only tested drugs.

734. Your examination was confined to drugs?—Yes, at Paris.

735. You are not prepared to give the Committee any evidence as to the purity, or non-adulteration of food, in Paris?—No.

736. How does the examination take place, on the part of this board of inspection, in Paris?—They come in without any previous notice. Five or six of the professors of the different schools are united for the purpose, and they ask for any article which is supposed to be found in the shop of a pharmacist and ordered by the Codex, and if they find it to be of an inferior quality, or adulterated, they throw it into the street publicly. If such a thing happens a second time, the shop is closed, and notice is put up; and if a third time, the licence to practise is taken away.

737. Mr. *Wise*.] I believe in this country the College of Physicians have the power to visit the shops of chemists and druggists?—Only in the city, I believe.

738. Do they carry out such inspection frequently?—I believe they do.

739. What would be done if any adulteration were discovered?—I do not know to what extent they carry out their authority.

740. Do you think it would be desirable to adopt the French system, and require all chemists and druggists to have licences?—I think so.

741. And

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741. And to carry out the system of inspection?—Yes; I think so.

742. Can you suggest any other mode by which the public may be protected against such frauds?—From my experience of the effects produced at St. Mary's by a quarterly examination of drugs, and refusing those which were of inferior quality or adulterated, I should say that if there were a central Board to which reference might be made, and by which in case of fraud being proved, punishment might be awarded, it would materially tend to diminish the system of fraudulent adulteration.

743. Do not you think we might with advantage adopt the American system of checking adulteration, by looking after the importation of drugs?—I think that is a point of the first importance.

744. At present there is no check whatever, is there?—I am not aware that there is.

745. In fact you think the public health is so much injured by the adulteration of drugs, that it is the duty of any government or legislature to take care that the public health should be protected by checking the importation of adulterated articles of medicine?—Quite so.

746. Mr. *Kinnaird*.] In a previous answer you used the word "fraudulent," do you do so advisedly; from your experience do you believe that this is done with a view of fraudulently imposing upon the consumers?—I quite think so. I think there are cases in which ignorance may have some effect in producing an inferior article. I know an instance of a man who knew nothing of chemical manufacture attempting to make chloroform; he sent out as chloroform the liquor that floated on the top, and threw away the chloroform itself.

747. Still you consider that in the majority of cases it is fraudulently done?—Certainly not. I believe, in the majority of instances, impurities arise from carelessness or want of knowledge in their preparation; fraudulent adulteration I believe to be the exception.

748. *Chairman*.] You admit that some impurities will arise in chemical compounds from the imperfect manner in which they are prepared?—Yes.

749. Independently of that, do you think that adulterations take place with a view simply to increase the dealer's profit to the disadvantage of the compound itself?—Yes, I cannot help thinking so, when I see an article containing 30 per cent. of ammonia charged only 6*d.*, and I find another containing six per cent. charged 8*d.*

750. Mr. *Otway*.] Are you acquainted with the system of drug grinding in France; is it the same system as obtains in this country?—No.

751. Will you explain the French system?—The French system is, that every pharmacist grinds his own drugs.

752. Every chemist is a drug grinder?—Yes.

753. So that drugs pass only through one hand?—Yes.

754. Mr. *Moffatt*.] Is that under any regulation, or is it merely the usage?—It is the usage, in order to insure purity.

755. There is no Government regulation to that effect?—No.

756. Mr. *Wise*.] If a man sells adulterated articles he is punished for it by his licence being withheld?—He is.

757. Mr. *Moffatt*.] You say that if a man sells adulterated drugs on a second occasion his shop is shut up; under what power is the shop shut up?—In the first instance, I think such parties are brought before the tribunal of Correctional Police; if found guilty the Prefect of Police affixes his seal to the door, with a general notice of the fraud. I have seen a butcher's shop there closed.

758. Does that system obtain in any other city in France besides Paris?—I think all over France.

759. Even the villages?—Yes.

760. Mr. *Otway*.] Are you acquainted with the chemists in the provincial towns in this country?—Yes.

761. Do you think, in any ordinary-sized town, the chemists would be capable of deciding upon a question of adulteration at once, looking to their knowledge and their character?—Not from my experience of their knowledge; there is a better class of chemists now rising up, under the direction of the Pharmaceutical Society; and when we have a set of chemists who have been regularly educated there, they will be quite equal to any French pharmacist.

762. Mr. *Moffatt*.] Your impression is that any student who has obtained a degree from the Pharmaceutical Society is quite competent to apply tests, to discover



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discover whether the drugs you have enumerated are pure or not?—Yes, quite so.

763. What is the number of students of the Pharmaceutical Society?—I do not know.

764. *Chairman.*] Have you examined beer?—Yes; I have had several samples brought me to examine; the result was that I have not found it adulterated to the extent it has been supposed to be.

765. Has it been adulterated at all?—Some of the samples have been diluted, others undoubtedly contained some narcotic principle; the effect produced was not that of alcohol.

766. *Mr. Kimbaird.*] What do you think was the narcotic principle?—*Cocculus indicus*, very likely; I could detect no trace of opium; it might have been tobacco; but the effect was a paralysis of the system, an inability to move, without an entire insensibility of the intellect.

767. Have you ever heard of any patient brought into the hospital of St. Mary, who was suffering specifically from having taken some adulterated article of food or drink?—I think not.

768. *Mr. Moffatt.*] Have you ever known any person who has become partially paralysed by drinking of this beer which you believe to be adulterated?—I have, myself, from tasting it; not finding any chemical substance, I took a glass of it, and I became so confused and so ill that I had no doubt there was either tobacco or *cocculus indicus*.

769. Would tobacco produce that effect upon the human system?—It would.

770. *Viscount Goderich.*] When you speak of partial paralysis you do not mean a paralytic stroke, but merely a state of stupor?—Quite so; a state of stupor, amounting to partial insensibility.

771. *Mr. Moffatt.*] How many samples of beer which you tested had this paralyzing ingredient in it?—Two.

772. Out of how many?—I should think I have examined some hundreds.

773. Would not pure malt and hops have rather a narcotic influence upon many systems?—I am not aware that it would.

774. *Chairman.*] You would have no difficulty in distinguishing the effect of a narcotic drug and the effect of alcohol?—None.

775. *Mr. Sheridan.*] Have you found much sugar in porter, so as to produce a froth?—No, I have found a little mucilage.

776. *Mr. Moffatt.*] You stated that the beer was diluted with water; by what means have you tested its being diluted with water?—I tested for the amount of alcohol.

777. What amount of alcohol do you say beer ought to contain?—A good beer, such as stout or strong ale, should contain from four to six per cent.; good porter would contain about two per cent.

778. What per-centage of alcohol did those which you believed to be adulterated contain?—Less than one per cent.

779. Would not it be quite possible that pure porter should contain only one per cent. of alcohol?—I never found it to be so.

780. Is there any regulation strength which enables you to detect whether the porter has been adulterated with water or not?—No.

781. Then how do you arrive at the fact that it is diluted?—I take it from the average which is observed at good breweries.

782. *Chairman.*] Do you take the average quantity and the average price, and do you consider that to be the standard, and, comparing it with other qualities, arrive at the conclusion that those which are sold at the same price, containing much less alcohol, must necessarily be adulterated with water?—Quite so.

783. *Mr. Moffatt.*] You say you take the average of the strength of the various breweries in London; what is the result of the average which you have so taken?—The average would be just what I have stated, about two per cent. for porter, and from four to six per cent. for stout and strong ale.

784. Stout contains double the quantity of alcohol that porter does?—Yes.

785. Have you found much variation in the strength of beer brewed at different breweries?—No.

786. Generally, the porter of the London brewers contains about the same quantity of alcohol?—Yes.

787. *Chairman.*] Have you examined wine at all?—I examined a sample of port

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port wine not long ago, which was brought to me, supposing it to be adulterated. It was a wine for which a good price had been paid; but it had been laid down in bottles for two or three years, and it still remained turbid, and had a musty taste, as if it were undergoing some decomposition. I found that so far from its being adulterated, it was a very natural wine, a very good wine indeed; the only fault was, that it contained an excess of acid, which no doubt it had in its natural state; but this excess of acid prevented the crust from being deposited, which is the bitartrate of potash. As soon as I added a neutral salt of potash to it, the bitartrate was formed, and it was all precipitated together, the wine was cleared, and it was pronounced one of the best wines the club possessed in their cellars.

788. Have you examined any other wine than port wine?—I have examined sherries.

789. Have you found them generally pure?—Yes.

790. The Committee has heard, among other things, that Cayenne pepper is adulterated?—I was consulted not long ago in a case in which a lady had been taking Cayenne with her fish, and having become very ill she had the colic; she thought at first she had the cholera, but it was only the colic. The medical man asked to see her Cayenne pepper, and sent it to me for analysis, and I found a great quantity of red lead in it; it was visible with an ordinary glass.

791. *Mr. Moffatt.*] What per-centage of red lead was there?—I did not estimate the per-centage; I ascertained it was there.

792. *Chairman.*] In dangerous quantities?—It looked as if it had from two to three per cent.

793. Would you consider that a dangerous quantity?—I should think so.

794. You have no doubt that the illness in this case was produced by the adulteration?—The medical man had no doubt of it.

795. Is that the only sample of Cayenne pepper which you have examined?—I never found a specimen of Cayenne pepper sent to the hospital as a sample adulterated with red lead.

796. Have you found it adulterated with anything else?—No, it was generally pure. That again is a question of importation, as I understand it. From the inquiries which I have made, the Cayenne is adulterated in the markets abroad.

797. Is Cayenne imported in its ground state?—Yes.

798. Always?—Not always; but to a great extent it is.

799. Where does it come from?—From South America.

800. It comes from other places besides Cayenne?—Yes, from other places.

801. The general effect of your evidence is to show that adulteration is practised, though not universally, to such an extent as to justify the Legislature in endeavouring to devise some means of preventing it?—Yes.

802. *Mr. Moffatt.*] Does your evidence apply to articles of food, or mainly to drugs?—My experience has been greater with regard to drugs.

803. *Mr. Otway.*] Has your experience extended to such articles as pickles, and jams, and sauces?—I have not examined them.

804. *Mr. Moffatt.*] Does it extend to such articles as tea, coffee, and sugar?—I have examined many samples of coffee, but I have never found any chicory with it when it has been stated to be pure.

805. Have you found any other substances besides chicory and coffee in articles sold as that mixture?—No.

806. *Mr. Otway.*] Were the samples which you examined purchased in the smallest shops in the worst districts in London?—No; on the contrary, they were purchased in good respectable shops.

807. You have never made any experiments upon coffee purchased in the smaller shops?—No.

808. *Mr. Moffatt.*] Have you ever analysed any samples of sugar?—No.

809. Of tea?—No.

810. Still you are of opinion, according to your answer given to the Chairman, that articles of food are so much adulterated as to warrant some description of Government interference?—I think so.

811. And you base that opinion upon having discovered some slight adulteration of milk, an instance of Cayenne pepper being adulterated, and two samples of beer out of a considerable number which you tested?—Although I have not actually



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actually examined them professionally, yet my experience would go to show that many articles of food are offered for consumption which are quite unfit for consumption; articles of meat and vegetables, for instance, I have seen constantly in a state of decomposition, such as ought not to be allowed.

812. When the articles of meat and vegetables are in a state of decomposition, that is palpable to the buyer?—The poor people buy them all the same, and are injured by them.

813. They have as ready a means of testing whether they are in a state of decomposition as you, who are a highly informed chemist, have?—Perhaps so.

814. And they pay a price accordingly, I presume?—No doubt.

815. Mr. Wise.] You have paid attention to the article of bread, have you not?—Yes.

816. Can you suggest to the Committee any very easy or simple mode of ascertaining the quality of bread, and whether a loaf contains anything else but flour in it?—I think the microscope is the most simple and ready test; it is applied almost instantly; whereas the chemical test requires some time.

817. Chairman.] Are you aware of the nature of some evidence which was given before the Committee two or three days ago with regard to alum being mixed with bread?—No; I have not seen the evidence.

818. The effect of that evidence was to show that the introduction of alum was not injurious, because the alum itself became decomposed into its three component elements, and in that condition could not produce the effect upon the constitution which alum would do in its combined form?—My experience would lead me to the same result; although I have found small traces of alumina, I have never in any instance found alum, which is a very different thing; it is a compound body, and soluble; whereas the other is insoluble, and united with the albuminous matters in the bread.

819. Whatever the effects of alum may be upon the human body, when heated in the process of manufacturing bread, your opinion would be that those injurious effects would be materially diminished, if not removed by that process?—They may be diminished; I will not say removed.

820. Mr. Peacocke.] In order to effect that decomposition of the alum, must not it be subjected to a much greater amount of heat than is usual in baking a loaf of bread?—No; I suspect that the mere fact of mixing it with an albuminous compound, such as flour, would of itself decompose it.

821. What amount of heat should you say would be sufficient to effect the dissolution of the alum into its component parts?—I should say that heat at the boiling point would be sufficient when mixed with flour and water.

822. Mr. Moffatt.] Have you ever discovered any traces of tobacco used in adulterating beer?—No.

823. Mr. Wise.] By the evidence you have just given, you do not mean to say, do you, that alum is not injurious in bread, though it be dissolved into its component parts?—By no means. I wish to give no opinion upon such a subject.

824. Have you any idea of the object the bakers have in putting alum in flour?—It prevents a bad flour from undergoing decomposition afterwards, when made into bread, so rapidly.

825. You say you have been in Paris?—Yes.

826. Are you aware that the bakers there are under the control of the municipal authorities?—Yes.

827. Do you think arrangements might be made by which the bakers of this country might be subjected to the same kind of supervision with advantage to the public?—I am not sufficiently acquainted with the Paris regulations to speak of them, nor can I say how far the English character would bear those which exist in Paris. Their organization is so much more complete, and they are educated to be under the control of the police.

828. Still, do not you think the public health and the protection of the great masses of the people is so important an object, that Parliament is bound to look after it?—My opinion is founded in a great measure upon what I have seen at Paris, and St. Mary's Hospital; and I think, as I said before, a Board of Reference, which would be able to detect adulterations which were injurious to the public health, and might inflict some penalty when they were discovered, would materially diminish fraud.

829. Comparing the bread in England and in France, which do you think is the better?—I should much prefer the French loaf.

830. Chairman.]

830. Chairman.] On what ground?—It is lighter; I do not know that I ever suffered indigestion from eating a French loaf.

831. Mr. Moffatt.] Have you ever analysed the French bread?—No.

832. Possibly it may have a little more of potato starch in it to make it lighter?—It is possible.

833. Chairman.] To what do you attribute the difference?—I speak only of my personal experience; the experience of my own feelings.

834. Mr. Moffatt.] May not the superior quality of the atmosphere in Paris cause the digestive organs to work more favourably for your own comfort?—That may have had some influence.

835. Chairman.] May not it be that the French flour is more easily ground?—There is no doubt the French loaf is lighter than ours.

836. Have you ever found an instance of plaster of Paris being mixed with bread?—I have heard of it, but I have not met with an instance of it.

Mr. William Bastick, called in; and Examined.

837. Chairman.] ARE you a Chemist and Druggist resident in London?—  
Yes; also an analytical and consulting chemist.

838. Residing in Brook-street, Grosvenor-square?—Yes.

839. You have, I think, published some work?—I edited for several years a work which was devoted to chemistry and pharmacy.

840. You have had, consequently, a very large experience in the examination especially of drugs and medicines?—Yes.

841. Will you favour the Committee with your views, in the first instance, as to whether adulteration in these articles is common?—I believe it is very extensively practised, both with respect to drugs and chemicals.

842. Do you believe that adulteration takes place abroad?—It takes place abroad, and it also takes place at home, both by wholesale and retail dealers.

843. In what articles do you suppose adulteration takes place abroad?—In crude drugs, such as scammony, for example; that comes generally into the market in an adulterated state.

844. What is the nature of the adulteration?—Principally chalk and flour, or some starchy substance.

845. Is there any other article you can name which comes in an adulterated condition; is opium, for instance, much adulterated?—Not so much so as has been represented before the Committee; it is naturally a mixed body, and therefore many persons think it is impure, but it comes here generally, with the exception of a few leaves and portions of the capsules, as it exudes from the poppy.

846. You consider opium tolerably pure?—As a general rule, it is tolerably pure; infinitely superior to scammony; especially to what scammony has been.

847. With respect to the adulterations which are practised at home upon drugs, have you any information to give the Committee?—I have a list before me which principally refers to those substances which are what I would term fraudulently adulterated; many bodies I can name contain impurities which some persons may suppose to be adulterations; but these are cases in which substances are actually added for the purpose of fraudulently adulterating the drugs, either in the process of manufacture or afterwards.

848. Some of the mixtures which are called adulterations you consider to be the results of imperfect manufacture?—Yes, not with a fraudulent intention.

849. Independently of those imperfections, are all the adulterations which you are now going to lay before the Committee of a character which you deem fraudulent?—Yes.

850. Will you state the articles to which you wish to refer?—The first article I will allude to is one which is largely used in agriculture, that is sulphate of copper. I have repeatedly examined it, and found it to contain sometimes 50 per cent. of sulphate of iron.

851. Which would materially impair its usefulness?—Exactly so.

852. Sulphate of iron being cheaper than sulphate of copper?—Yes; the object being to reduce the price.

853. Was the article adulterated sold at the same price as the genuine and pure article?—No; there was generally a great disparity in point of price between the two articles.

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854. The adulterated article was very much cheaper than the other?—Exactly so. The next instance I wish to allude to is the adulteration of essential oils with turpentine and other volatile and fixed oils; this is constantly the practice both at home and abroad: at home by the wholesale druggists, and abroad by the manufacturers.

855. Will you name any other article?—The next article I allude to is the adulteration of musk: that is carried on both at home and abroad.

856. With what is it adulterated?—Abroad with lead, dried blood, and other substances, and at home I have found it to be adulterated with mahogany dust. The hairs from the tail of a horse are cut into pieces, so as to represent the hair which covers the pod from which it is obtained.

857. Is that sold at the same price as genuine musk?—The object is to impose upon the customer and make him believe that it is the same, and therefore it may be sold at the same price. The next article is sweet spirits of nitre, which is adulterated with alcohol and water.

858. Is there any standard of strength for sweet spirits of nitre?—There is the pharmacopœia, which ought to be the guide.

859. There would be no difficulty in the detection of that adulteration?—No. The next article is a substance which is largely used in this country, termed white precipitate. I have found that not only largely adulterated, but sometimes absolutely containing no white precipitate whatever. That is effected by mixing corrosive sublimate with chalk or some other substance of an inert kind; the corrosive sublimate is to produce the active effect, and the chalk is the mere material to contain it. Red precipitate I have also found largely adulterated with red lead, as much as one-third has been red lead.

860. Would that be a dangerous admixture?—Not so dangerous as in the case of the white precipitate.

861. Mr. Cropper.] Do you think, if the white and red precipitate were imperfectly mixed with the chalk and the other articles, they might act separately without the dilution of the chalk?—Yes.

862. And therefore lead to very injurious consequences?—Certainly. The next article I have found adulterated is saffron, with saff-flower, an article used by dyers, and which is a much cheaper article. Wax is adulterated with spermaceti almost constantly, or with some cheaper kind of fat. Creosote with carbolic acid; that is a very common adulteration or substitution.

863. Chairman.] For what purpose is creosote used?—It is used very largely by the public in cases of toothache, and frequently for internal administration; the effect of the adulteration would be, that it would have a totally different action. Honey I have found frequently adulterated with flour and sugar, or syrup, that is of course a solution of sugar and water; in fact it is constantly to be met with in London so adulterated. There is a class of bodies I should wish particularly to draw the attention of the Committee to, which is a series of powders vended by wholesale druggists, which they are pleased to term compound powders. Those powders if they were properly designated, would be called adulterated powders. They are obliged to use a term in contradistinction to that of compound powders, and they employ the word "*verus*." If, for example, you wished to order genuine aniseed powder, you would ask for *pulvis anisi verus*; but if you wanted the adulterated powder, you would ask for *pulvis anisi compositus*. The most frequent instances of these adulterated powders are aniseed, carraway seeds, fenugreek seeds, liquorice, gentian, turmeric and stavesacre. The recipe which I propose to read to the Committee for compounding one of these powders is only a type of many others. It is in a book which I have in my hand, which belonged to a person who used to manufacture these powders who is now dead, and therefore I feel no delicacy in reading it. The following are the materials for making compound gentian powder: true gentian, 1 lb., linseed, 5 lbs., flour, 2 lbs., cape aloes, to give the bitterness, a sufficient quantity; that is the recipe employed to make gentian powder *compositus*.

864. If I understand rightly, there are 7 lbs. or 8 lbs. of material, having only 1 lb. of the genuine article in it?—Yes.

865. Mr. Sheridan.] Who are the parties who apply for *pulvis compositus*?—The retail druggist; it is a conventional term between the retail and the wholesale druggist, invented to avoid the disagreeableness of talking about adulterated articles.

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866. Any medical man using gentian made up according to that receipt, would find his expectations totally fail?—Entirely.

867. Mr. Sheridan.] The wholesale druggist compounds the powder?—In most cases it is done by him, or by the drug grinder on his behalf.

868. Chairman.] What would be the relative selling price of the true gentian and the *compositus*?—A wholesale druggist would speak to that better than I can; of course there is a considerable reduction. I will mention one other instance of the composition of a compound powder, that is turmeric: common ochre, 1 lb., true turmeric, 1 lb., flour, 2 lbs.

869. That is in the proportion of one to four?—Yes.

870. You alluded just now to the use which has been made of the term "conventional adulteration;" do you consider the practice you have now referred to as conventional between the druggist and the drug grinder, or between the wholesale druggist and the retailer?—Yes, between the wholesale druggist and the retailer; certainly not as regards the public.

871. The drug grinder and the retailer understand each other, and therefore it may be said to be a conventional arrangement between them; but do the public, when they purchase these powders, understand that there is this admixture in the one case of four to one of foreign material, and in the other of seven to one of foreign material?—Certainly not.

872. Does a medical man who prescribes those powders expect to find those proportions?—Certainly not.

873. Then, although this may be a conventional matter between a portion of the trade, the public is literally defrauded?—Undoubtedly; nor do I believe that the public in any instance are a party to any adulteration, or willingly purchase an article which is adulterated.

874. Mr. Sheridan.] The prescription of the medical man is not complied with in those cases?—Certainly not, when one thing is substituted for another.

875. Chairman.] You have hitherto principally spoken of the adulterations practised by wholesale druggists and drug grinders; are you acquainted with the practice of retail dealers?—In some cases, in the case, for example, of sweet spirits of nitre, the adulteration is also practised by the retailer. The case which I am going to mention was practised by the retailer, at least I presume it was: he sold bisulphate of soda for tartaric acid, which was a case of substitution; I understand that that is very extensively done by some parties.

876. Is that ever used medicinally?—It is.

877. Do you think the class of retail chemists generally would be able to detect adulterations in the articles they sell?—Not at the present time.

878. They are not sufficiently educated to do so?—There are many who can, but the majority cannot.

879. Many chemists at the present day may be selling adulterated articles without knowing it?—Unquestionably.

880. At the same time, do you believe that many are selling adulterated articles knowing the facts?—Certainly.

881. Have you turned your attention to the means which might be adopted to prevent those adulterations?—Yes; my idea upon that point is, that the Legislature ought to interfere. There ought to be some body of persons appointed to inspect, from time to time, according to circumstances, articles of food, as well as drugs and chemicals; and I believe the moral effect of that would be, independently of the actual cases where detection took place, to prevent men either selling adulterated articles or effecting adulterations. When the "Lancet" investigations were going on, such was the terror which traders felt of having a visit from the "Lancet" commissioners, that those who had been in the habit of adulterating left off doing so. In cases they have since resumed it, having no fear of the surveillance they were before subjected to.

882. Viscount Ebrington.] Are you aware what success has attended the measures adopted abroad for the detection and prevention of adulteration?—I have had no experience in France, but I have had some little experience in Germany. There I found, as a rule, that nothing could be better than the articles sold there in the apothecaries' shops.

883. What part of Germany do you refer to?—On the Rhine chiefly. Every apothecary is compelled to undergo an examination; his materials are subject to inspection also by a person appointed for the purpose.

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884. So that you do not consider it at all a Utopian idea that by judicious legislation we might practically obtain, not perhaps a perfect freedom in all cases from adulteration, but a great mitigation and diminution of the present system of adulteration?—I have no doubt of it.

885. *Chairman.*] Do you think any large body of inspectors would be required for the purpose of detecting adulteration?—Not a large number; I believe the benefit would arise from the moral effect; in other words, the fear of being detected would act as a bar to adulteration taking place.

886. *Viscount Ebrington.*] Are you aware what punishments are inflicted upon those who are detected in adulterating food or drugs in the part of Germany you have been speaking of?—In some cases a remonstrance or reprimand is given, and in other cases penalties are inflicted; and in some cases they go so far as to take away the right to practise as an apothecary.

887. *Mr. Moffatt.*] You have stated numerous instances of adulteration in drugs; will you go on and state what has come within your knowledge in reference to the adulteration of food sold to the public?—As regards bread, I have examined it, but I have not made so many examinations as many witnesses have. I can state, of my own knowledge, that it is almost constantly adulterated with alum.

888. Have you tested bread to find whether it is adulterated with alum?—I have.

889. To what extent is it adulterated with alum?—I should say it is generally in the proportion of about 1 lb. to 3 lbs. or 4 lbs. in 100 loaves; I am speaking without the actual figures before me.

890. That is an average of 2 lbs. in 400 lbs. weight of bread?—Yes.

891. Is it your opinion that that would be prejudicial to the general health of persons constantly eating that bread?—I think so.

892. What other articles of food have you analysed?—Cayenne pepper I have examined, and I have found red lead in it.

893. Have you examined many samples of Cayenne pepper?—Not numerous samples.

894. The samples you have analysed, you have generally found pure, with the exception occasionally of red lead?—Yes.

895. Are there any other articles of food you have analysed?—I have occasionally analysed wine.

896. What has been the result of the analysis?—Not that there has been anything prejudicial or poisonous in it, but I have come to the conclusion that many wines which are sold are manufactured articles.

897. All wines are manufactured articles?—I have a recipe here which will show the Committee more distinctly what I mean by manufactured articles. The following is said to be a recipe for making an imitation of good port wine: "Good cider, 45 gallons; brandy, six gallons; good port, eight gallons; ripe sloes, two gallons; stew them in two gallons of water, press off the liquor, and add, if the colour is not strong enough, tincture of red sanders; in a few days this wine may be bottled; add to each bottle a tea-spoonful of powdered catechu, mixing it, when it will very soon produce a fine crusted appearance. The bottles being packed on their side as usual, soak the ends of the corks in a strong decoction of Brazil-wood with alum, which along with the crust will give it the appearance of age."

898. What has been the result of that compound?—I have not mixed it.

899. Have you ever seen it?—I have seen a liquid represented as being wine, which I believe to be a compound similar to that which I have described.

900. With respect to that particular recipe, which you have been so kind as to read to the Committee, have you ever known any liquid produced from it?—No.

901. You are not aware that it has ever been put into practical operation?—I have no doubt it has been, but I never examined the result myself.

902. Do you believe that the person in whose book that was, was in the habit of making port wine and vending it, or using it himself, of the nature of that composition?—I believe he was.

903. He was in the habit of vending it?—Yes, I believe so.

904. He was not only a chemist, but a wine-maker?—He was a general trader, such as you find in country towns.

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905. Will you go on to state what other articles of food you have found adulterated?—For instance, anchovy sauce I can speak to as being frequently a factitious article; and I have found chicory mixed with coffee.

906. *Mr. Gregson.*] In what proportions?—About 25 per cent. of chicory, I should say generally.

907. Is there anything prejudicial to the health of the public in that?—No. I myself drink chicory with my coffee.

908. Chicory mixed with coffee is, in your opinion, an improvement?—Yes.

909. *Chairman.*] I understand you to be speaking of a case where coffee was sold as pure coffee, which contained 25 per cent. of chicory?—Yes.

910. Can you state any ready means of discovering the difference between chicory and coffee?—The microscope is a very simple means of detection, and there are various others.

911. *Viscount Ebrington.*] Have you ever found the chicory which has been used to mix with coffee, itself adulterated?—I have not examined it with that object.

912. *Chairman.*] Is it your opinion, so far as your observation extends, that there is a sufficient amount of adulteration now carried on in reference to articles of food to warrant legislative interference for the purpose of preventing it?—Yes.

913. *Mr. Moffatt.*] And you deduce that opinion from the facts you have stated to the Committee?—Yes; both from my own experience and that of others.

914. What is the experience of others which you rely on?—Dr. Hassell's statements.

915. Are you disposed to endorse Dr. Hassell's statements?—Yes.

916. And Dr. Normandy's?—Yes.

917. *Mr. Gregson.*] Have the articles which you have examined been brought to you for the purpose, or have you purchased them yourself?—Some of them have been sent to me by correspondents, and sometimes I have purchased them myself.

918. *Viscount Ebrington.*] Do you see any reason why legislative interference for the protection of the public from adulteration should not be as necessary in England as it is in countries on the Continent, where such legislative interference exists?—Certainly not.

919. *Chairman.*] Have you examined the article of annatto at all?—I know it to be largely adulterated.

920. Is not it necessary, to some extent, that it should have some foreign matter introduced with it when imported?—I have heard reasons given why there should be foreign matter mixed with it, but I am satisfied that the foreign matters usually present are far more than sufficient for the purpose for which they are said to be added to the annatto. I believe if you can justify, by the reasons given, the addition of 60 per cent. to annatto, you might justify the addition of 99 parts out of 100.

921. You believe the quantity is so large that it cannot be added merely for the purpose of preserving the annatto, but that it is added for some fraudulent purpose?—Quite so.

922. *Mr. Sheridan.*] You have produced a book containing recipes, from which you have read one which professes to be a recipe for making good port wine; have the wholesale druggists generally a book similar to that?—I believe every manufacturing druggist has a similar kind of book, from which he makes his compositions.

923. How did that book come into your possession?—After the death of the person to whom it belonged.

924. *Mr. Moffatt.*] It is a general practice with wholesale druggists to have a book of that kind, is it?—I am sure a great many of them have.

925. *Mr. Gregson.*] Is that a book which is published?—No; there is a work of that kind called Gray's Supplement to the Pharmacopœia, but the receipts for adulterating are not to be found in the present edition; the former editions contained all kinds of directions for adulteration, but Professor Redwood, who has been a witness here, was the last editor of the Supplement, and he suppressed this part of the publication.

926. *Chairman.*] Who was the author of the publication to which you refer?—Mr. Gray.

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927. What was Mr. Gray?—He was a pharmaceutical chemist, part of his life, in Bond-street.
928. Is he alive?—No; he has been dead for some years.
929. Under what circumstances did his publication come before the public?—It came before the public under the title of a "Supplement to the Pharmacopœia." In that book were contained recipes for making various preparations, and also for adulterating all kinds of substances.
930. Mr. Redwood was the editor of the last edition of the Pharmacopœia, and he suppressed those recipes which taught people how to adulterate drugs?—Quite so.
931. Is that work in existence?—Yes; it can be got very easily.
932. You have alluded to the Pharmaceutical Society; is it your opinion that that society is now working a great amount of good?—I believe it is; and I believe if Parliament gave to it greater powers it would do much more.
933. What is the number of students?—There are generally from 30 to 40 there at a time.
934. Do you know what supervision is exercised by any public body in this country over druggists?—The College of Physicians has the power of visiting chemists' shops in the city of London, but not further; I believe they carry that out twice a year.
935. Do you think that power is exercised beneficially at the present time?—I think not, because the examination has been so superficial; their examinations, so far as I have been able to observe them, would lead to nothing; it requires the use of test tubes and other means to detect these adulterations; they are seldom evident to the naked eye.
936. Mr. Gregson.] Do not they take away some articles to analyse?—I have never observed them to do so; I have heard that they do in some cases.
937. Chairman.] Do they come at fixed periods?—No; you do not know when they are coming.
938. Do you think such an examination would be beneficial if conducted in a more formal and minute manner?—Yes; I think there should be paid officers who should devote their whole time to the performance of that duty, and do nothing more.
939. Those are not paid officers?—No, they are the censors of the college, or some committee appointed for the purpose.
940. Viscount Ebrington.] Do you believe that the check of exposure and publicity would of itself go a long way to deter people from those practices, independently of any punishment which might be inflicted upon offenders in the way of fine or imprisonment?—Yes, I have no doubt of it; but I think also some punishment ought to be inflicted.
941. When the officers of the College of Physicians detect any adulteration, what is the punishment which they apply to the parties practising it?—I do not think I recollect any instance in which they have inflicted punishment, except perhaps by the destruction of drugs.
942. Mr. Moffatt.] You have read a recipe for making an imitation of port wine; is it your opinion that that would be a prejudicial beverage to drink?—No, I do not know that it would.
943. It could of course be produced at a much cheaper rate than port wine, and you think it would have a cheering stimulating effect?—Yes.
944. Chairman.] Is it not your opinion that to sell that mixture under the name of good port wine is a gross fraud?—Certainly it is.
945. Mr. Moffatt.] If the persons who make it, sell it under the name of good port wine, at 12 s. a dozen, can you call that a gross fraud?—I think it would be a fraud to sell anything under a name which does not belong to it, and so to deceive the public.
946. Mr. Sheridan.] Do you believe the persons who make such port wine with that view, sell it at 12 s. a dozen?—It may be sold perhaps at 18 s. a dozen. I cannot say exactly what is the price. These imitation port wines may be bought at any grocer's shop who sells British wines.
947. Chairman.] You are clearly of opinion that, at whatever price the mixture is sold, if it is sold under a name which it has no right whatever to bear, it is a fraud upon the public?—Certainly.
948. Mr. Moffatt.] Will you explain why it is not port wine; a man chooses to make it, and to call it port wine?—I do not think I can explain that.
949. If A. manufactures any article which has not been previously known as

as an article of manufacture, and chooses to call it by a particular name, is it a fraud for him to call it by that name?—I think it is. I can state several instances in which what I consider frauds of the same kind are practised. The common washing soda is sold at exorbitant prices, under various names, by persons who profess that they have a superior preparation for washing to anything which has been known before. These preparations, generally speaking, consist only of soda.

950. If sold at a higher price, that may be a fraud; but, does not the fraud consist, not in the name, but in the price which is asked?—I think it is a fraud to pass an article off by calling it by the name of another article.

951. Chairman.] Take the case of opium; opium is said to be imported into this country which contains not an atom of the principle of morphia; supposing that were sold at one-tenth of the usual price of opium, would you consider because it was sold at that low price, that a person was justified in selling it as opium?—Certainly not; if he represented it to be opium it would be a fraud, unquestionably.

952. However low the price might be?—Yes.

953. It is imported as opium, and sells for opium, but really contains no opium at all; however cheaply that might be sold, you think the sale of it would be a fraud upon the public?—Yes; it is utterly valueless, and therefore is dear at any price.

954. Viscount Ebrington.] In short, the object of language is to describe ideas by words?—Certainly.

955. Mr. Cowper.] You regard it as a fraud to attach a false name to an article?—I do.

Mr. James Baiss, called in; and Examined.

956. Chairman.] YOU are a wholesale druggist, are you not?—Yes; not a drug grinder, but a drug merchant and importer of drugs, supplying druggists and the medical profession in this country and in foreign countries with drugs and chemicals.

957. It has been stated to the Committee by previous witnesses, that wholesale druggists are in the habit of sending, say, 100 lbs. of drugs to be ground, and requiring that the loss sustained shall be made up by the admixture of some other powder; thus adulterating the drug when powdered; can you confirm that statement or otherwise?—I deny it *in toto* as far as our own firm is concerned, and I have made inquiries within the last week, and find that the evidence which I complain of, as given at the end of last Session, is not correct. It refers to an old custom many years ago. I have especially inquired of some of the most respectable drug grinders, and they assure me that it is not the custom at present, but one which has been exploded. Here and there it is possible there may be some parties still continuing the old practice; but as a custom, I am assured by them that it is not the case. As far as we ourselves are concerned, I have written to the gentleman who gave that evidence last Session, offering to show our books, and everything connected with our establishment; I can also prove upon oath, if necessary, that it is not the case.

958. That may be perfectly true as respects your own establishment, but what is your opinion with regard to others?—I have made special inquiries, with a view to be enabled to state what is not only our practice, but the custom of the trade generally, among respectable houses; it is an old custom which obtained many years ago, but I am happy to say that that kind of fraud does not exist now, as I am assured by parties who grind for respectable houses in the trade.

959. Viscount Ebrington.] You believe it is a practice which has been long disused?—They assure me that it is so; I have put the question to others, "What is the custom of the trade; and is that which has been stated correct?" They say, "Certainly not; it has been exploded many years."

960. Can you tell at all what the feelings of the trade would be with regard to any authorised inspection for the protection of the public against others in the same business having recourse to the practices which you repudiate?—My impression with regard to inspection is, that it would be of great service, not only to us as wholesale druggists, but to the public generally, if an inspector were appointed to inspect drugs in bond, such as opium, scammony, jalap, and other drugs which are imported, and if he were to put his seal upon those

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packages which were good, that would render them current in the market. Those which were not found to be good should certainly be rejected.

961. *Chairman.*] Are you of opinion that a large quantity of impure drugs is imported into the country?—Yes, which ought not to come into consumption; and if parties on the Continent from whom those drugs are imported knew that there were inspectors here, it would at once check them in sending impure drugs into this country; the fact that they would be returned upon their hands would be of itself a sufficient inducement to them to send a genuine article.

962. *Mr. Sheridan.*] You are in the habit of sending drugs to be ground, are not you?—Yes.

963. What are your directions to the grinder?—That the exact produce of every article sent shall be sent home to us, leaving us to bear the whole of the loss. If the Committee will allow me, I will state, that I copied from our mill-book this morning a few instances by which I can show the loss upon the grinding at once. On 128 lbs. of rhubarb root ground, the loss is 6 lbs.; the whole of that loss we bear; we do not have it made up. The next article is opium; the loss is 12 lbs. in grinding 100 lbs., the whole of which we bear. On scammony, 100 lbs., loss 9 lbs.; on aloes, 90 lbs., loss 6 lbs.; on a cask of cream of tartar, 10 cwt. 2 qrs. and 1 lb. gross, the produce was 9 cwt. 3 qrs. and 12 lbs., the loss being 13 lbs., the tare of cask 2 qrs. and 22 lbs.

964. *Mr. Gregson.*] Are those losses by impurities?—By evaporation and grinding.

965. Not by adulteration?—No; I have given the exact produce, accounting for the loss by grinding; nothing is mixed with the genuine article brought home.

966. *Mr. Sheridan.*] What security have you against being imposed on?—We have the refuse sent home. In grinding 100 lbs. of opium, for example, there is a loss by drying; and that portion which will not go under the stones of the mill comes home to us; so that we get the actual produce of the genuine article returned.

967. Would you always calculate in that way, that whenever you sent 100 lbs. of opium, there would be 12 lbs. loss?—Some opium would be drier than others, and there would be a less loss; 143 lbs. of Socotrine aloes produced 122 lbs., leaving a loss of 21 lbs.; 100 lbs. of ipecacuanha lost 6 lbs.

968. *Mr. Gregson.*] Is that refuse so sent back to you applicable to any use?—That which will not go under the stones at one grinding would be sent with the root the next time to be ground; it is the rough part of the root which is left, at the end of the sifting process.

969. *Viscount Ebrington.*] Do you think the duty of inspectors should be limited to the inspection of drugs in bond, or do you think it would be desirable that they should extend their inquiries to goods after they come into the hands of dealers in this country?—I think it would be to the benefit of the public if they inspected goods generally; but in order to ensure our getting our drugs genuine from abroad, they should be inspected in bond.

970. You would begin at the beginning?—Yes.

971. And follow up the goods into the hands of the retail dealers, through the successive dealers?—If the cases which the previous witness has stated are correct, it certainly shows that there is great necessity for it; but such experience is foreign to my own. I should imagine, in the case of the gentleman who is dead, and whose book has been produced, his practice has died with him.

972. *Mr. Gregson.*] Could you have an inspection in bond which would satisfy you as to the quality of the articles, without an analysis of them?—Yes; all the packages could be opened in bond, and they should be examined minutely, till the parties on the Continent become accustomed to send genuine articles.

973. *Viscount Ebrington.*] You think they should be liable to inspection?—Yes; the fact of there being inspectors, I think, would prevent bad articles being sent.

974. You do not believe that the trade in general would have any objection to an authorised inspector examining drugs?—I should say all honest persons would not.

975. It would be an advantage to the honest and a loss only to the dishonest?—All honest persons would be willing to expose the whole of their drugs, in my opinion, if required.

976. And

976. And as you believe the majority of the dealers are honest, you think the measure would be acceptable to the trade?—I should hope it would.

977. *Mr. Moffatt.*] It has been stated that a very large proportion of the adulteration practised in drugs is due to the drug grinders; that statement was made by a gentleman of considerable pretensions. I should like to ask you whether that assertion is accurate within your practical knowledge?—I have made inquiries of some of the most respectable drug grinders in London, who grind for the majority of the wholesale druggists, and they assure me that such is not the case. One house stated that they had in no instance since they had been in business, for many years, made up the loss of four per cent. which was alluded to.

978. *Mr. Sheridan.*] In all cases the wholesale druggist suffers the loss which you have mentioned?—In so large a body I am not prepared to say that all do, but those who are actuated by proper principles of honour and honesty would do so. I am assured by the drug grinders who grind for many houses that the old system has been exploded.

979. *Mr. Moffatt.*] It was further stated by this witness, "A person having a drug which he wishes ground forwards a given weight of it to the drug grinder. The drug is generally returned to him of the same weight, or nearly so, and sometimes it is even ordered to be returned weighing so much more." Has any such instance as that come under your experience; have you ever heard of such a thing in the drug trade?—I may name an instance. I heard within the last few days from one of those drug grinders, to whom I have referred; he said, in the course of the last 30 years, he has had something like four or six applications to grind in the way there stated, but he has refused to do so, feeling that it would be dishonest.

980. What experience have you had in the drug trade?—Between 30 and 40 years.

981. And you have never heard of such instructions as those being carried into effect?—Certainly not.

982. You do not believe that it is the practice?—I believe it may have been formerly the practice; but I am assured that it has been exploded for many years; indeed, not only is it the duty of wholesale houses, but it is their interest to supply druggists with the finest articles they can.

983. The general practice of wholesale druggists is to send their drugs to the drug grinder, and receive exactly the same weight in return, after making the ordinary allowance for evaporation and wastage in the process of grinding?—I am assured by those drug grinders to whom I refer, that it is not the practice to make up the loss.

984. As far as your own experience goes in your own trade, and also that of respectable wholesale druggists in London, the practice of calling upon the drug grinder to make up the loss does not exist?—In no single instance does it exist in our own establishment, and I have no doubt that many others are as honest as ourselves; there is of course great room for adulteration if persons choose to be dishonest.

985. *Viscount Ebrington.*] You do not yourself utterly disbelieve the existence of such a practice at the present time, do you; you only believe, I understand, that it is discontinued by the majority of the trade; the more respectable houses in the trade?—Just so. I believe it may be done by persons who have no care for their character; but that it is not the practice of the trade, I am prepared distinctly to state.

986. *Mr. Gregson.*] Have you seen many drug grinders upon this point?—I have spoken to some of the principal grinders in the trade, who grind, I may say, for all the houses of importance.

987. How many drug grinders are there in London?—There may be six or eight, perhaps; but there are two or three houses which have the principal portion of the trade. I have spoken to those who grind for the greatest number of druggists in London.

988. *Mr. Sheridan.*] It is pretty well ascertained now what the amount of loss is in grinding any particular drug, is it not?—Yes; some may imagine that four per cent. is the average loss, but I have proved that in some instances we lose six, nine, and even 12 per cent.; whatever the loss is, we submit to the whole of it; and I have no doubt that is the practice with many others besides ourselves.

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989. *Chairman.*]

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989. *Chairman.*] I gather from your evidence that you are of opinion that adulteration is so far practised, and impure drugs are so far imported, that it would not be unadvisable for the Government to interfere by means of inspection with regard to druggists' shops, and in regard to importation by an examination of the drugs in bond?—I think so. I believe the College of Physicians now exercise the power of examining druggists' shops.

990. That applies only within the city of London, does it?—I am not aware whether it is confined to the city of London.

991. Do you know to what extent that is practised?—I have understood that they can call at the shop of a druggist once in three or six months, but I am not quite certain.

992. You do not probably know anything practically of the effect of the examination?—I do not. I have written to the physician who gave evidence here on the last occasion, requesting that he would visit us at our establishment, in order that he may see that the assertions he made with respect to the custom of the trade generally are incorrect, so far as we are concerned.

993. *Mr. Moffatt.*] Evidence has been given before this Committee, to the effect that wholesale druggists generally keep a book which contains various recipes for the manufacture and composition of spurious articles, particularly of what are called compound powders; do you believe that to be the case?—I certainly do not believe they make such articles to sell as genuine.

994. *Chairman (to Mr. Bastick).*] With reference to the use of the book, of which you have given evidence, I understood you, in the first instance, to say that that book was one which belonged to a person who is now dead?—It did.

995. Did you intend the Committee to understand that a similar book to the one which you produced is in use by the trade generally?—A great many wholesale druggists have such a book; I do not say that every one has, but I believe that many of them make those compounds of which I speak.

996. *Mr. Moffatt (to Mr. Baiss).*] Are you aware of the existence of such a book among wholesale druggists?—The book we take is the Pharmacopœia, to which we strictly adhere in making our preparations; of which our laboratory book will be an evidence.

997. It has been described to this Committee that there is an edition of the Pharmacopœia which contains those recipes by which you can compound various spurious drugs?—I must premise by saying that we do not compound those things; we sell the drugs perfectly genuine, and do not compound the articles mentioned.

998. If gentian is to be sold, you do not sell a gentian which is a compound of that and four or five other ingredients?—No. We sent 120 lbs. of the root to the mill, and it produced 107 lbs. of powder, the loss being 13 lbs. This only is what we sell as gentian powder.

999. You are not in the habit of selling an article under the name of gentian mixed with other articles to make up that which you supply to your customers as gentian?—We sell the article precisely as it is sent from the mill.

1000. And your belief is that that is the practice of other respectable druggists?—I have no doubt it is; I cannot for a moment imagine that a respectable house would sell a compound article as the true powder.

1001. *Mr. Sheridan.*] Suppose they are asked for an article and the word "compositus" is used?—If it is kept as a compound powder, they might sell such a thing.

1002. Have you in your own establishment two kinds of gentian, one the compound article, and the other the pure article?—If a person in the country wanted compound powder of gentian, we could procure it; but it is so seldom called for, that few houses would keep it, in quantity.

1003. Where would you procure it?—From the grinders, I suppose.

1004. Not from the wholesale druggist?—The wholesale druggist would not make it, I should imagine.

1005. There is such an article sold in the trade as "gentian compositus," is there?—If so, it must be in very rare instances, as I before stated. We imported five tons of gentian last year, and we have no demand for an article of that kind, in quantity.

1006. *Mr. Moffatt.*] You are not aware of that article being one of the current articles in the trade?—It would only be in very rare instances. There is an article called "compound liquorice powder," which persons in the country

country require for veterinary purposes, but they would not use that, I apprehend, where the true liquorice powder was required. I believe it is required for rolling up their physic balls.

1007. *Mr. Gregson.*] Do you sometimes supply that?—If required we can get it; we do not make it.

1008. *Chairman.*] Is it or is it not the practice of retail druggists to ask for powders under the name of "compound powders"?—It would be only for such purposes as I have named. Compound liquorice powder, and compound aniseed powder, &c., are asked for, but no respectable house would sell those compound articles as genuine powders.

1009. The question is whether there are members of the trade, to any considerable extent, who may be supposed to be purchasers of the more compounded and fraudulent articles?—They would not be sold as the genuine ground article; they would only be sold for common purposes, such as I have stated, being inquired for in agricultural districts for cattle.

1010. *Mr. Moffatt.*] Are you aware that they are generally sold as a fictitious thing to represent the real article?—No. Compound powders are sold to country druggists for cattle medicines. They may be used as a vehicle to convey small quantities of strong medicines for cattle, as water is used by a surgeon in mixtures for patients.

1011. *Chairman.*] What would gentian powder be used for unless to be sold in its adulterated condition as gentian powder?—I cannot suggest any use for it but for cattle, and I should imagine there could be no demand for the article, scarcely.

1012. *Viscount Goderich.*] Do you believe that liquorice powder is the only article of that description which is sold?—I think the previous witness spoke of compound aniseed powder; that would be another of the same character.

1013. Do you, of your own knowledge, know that any articles of this kind are sold in the trade?—As I before stated, occasionally country druggists write for compound liquorice powder, or the compound aniseed powder which has been mentioned; but I do not apprehend that they would require these powders to sell as true powders; if they do, it is fraudulent.

1014. Do you believe that they ever ask for those powders at all?—I believe they do occasionally write for those common articles from the country for the purpose to which I allude, that of cattle medicines. In the case of the first article on my list, namely, rhubarb, nobody would write for compound rhubarb powder instead of genuine; there is no such thing recognised.

1015. *Chairman.*] Did you ever hear of such a thing as compound gentian?—Yes; but I should imagine that the sale is so extremely small, that it would be little in comparison with the true powder.

1016. *Viscount Goderich.*] Would compounds of gentian be used as horse medicines?—I do not know what other purpose they could be used for except for cattle, and even for that it should not be used further than as before stated, a vehicle for stronger medicines.

1017. *Mr. Sheridan.*] Have you ever been asked for it?—I am not prepared to say we have not, among the many thousands of orders we have received from the country.

1018. You do not keep it?—No; we do not make any of those things, I assure you.

1019. *Mr. Gregson.*] Is there a class of druggists called brewers' druggists?—I do not know such, but I have heard the term.

1020. *Chairman.*] The effect of your evidence apparently is to show that very little adulteration goes on among wholesale druggists?—Quite so, among those who are respectable, and who desire to act with integrity. It is perfectly competent for any man to be dishonest, especially in the drug trade.

1021. Do you think the trade generally to be very honest, or do you believe there are persons in it who practise adulteration?—I should say they are honest, generally speaking. Even upon the low ground of policy, it would be opposed to their interests to act dishonestly; and I do not imagine that among respectable houses in the city, there are many, if any, who would, for the sake of extra profit, act so dishonestly.

1022. If you were asked whether adulterated drugs were sold by wholesale druggists,

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druggists, what would be your answer?—I should say that they are not; I cannot say that among such a large body of men there may not be instances to the contrary, but I do not believe it can be said to be the general practice of the trade.

1023. Do you believe that adulterated drugs are sold in any considerable quantity?—I have no doubt that among the large quantities of drugs which are sold, there are some which are not so correctly prepared as they ought to be; every article should be made in complete accordance with the Pharmacopœia. That is the book which we ourselves use, and I have no doubt many others are equally honest with ourselves.

1024. If the practice of the trade were such as you describe, it would appear that the appointment of an inspector to examine those druggists' shops would not be requisite?—It has been stated by a previous witness, that adulteration goes on all through the trade: after we send articles which we pledge ourselves to be genuine to a retail man, if he chooses to adulterate them he can do so; but I should say not one in a thousand would do so; of course, here and there, there may be a man who will.

1025. Have you conducted any analysis yourself?—I have not occasion to do so, having a person in our establishment to test articles before they are sold.

1026. Mr. *Sheridan*.] Did you hear the evidence of the previous witness?—Yes, and I was most astonished to hear it. One of the articles that gentleman alluded to was white precipitate; the adulteration named by him is perfectly easy of detection: nothing needs to be done but to heat an iron and place a portion of this article upon it; if genuine, it is all dissipated by the heat; if adulterated, the portion which is chalk remains.

1027. Viscount *Ebrington*.] Do you think the existence of facility for the detection of a fraud, if any one will take the trouble to employ it, is a sufficient protection against that fraud?—I should think so, generally speaking. These things are easily discovered by testing, and in the case of the article just named, by the very commonest test, that of applying a heated iron.

1028. There are various simple tests for distinguishing coffee adulterated with chicory from pure coffee; but do you believe the existence of those simple tests, and the facility of applying them, is a practical protection to the public against being largely imposed on by adulterated coffee?—I cannot say.

1029. Mr. *Moffatt*.] Are you acquainted with the coffee trade?—I am not. In every trade, if persons choose to act dishonestly, there is plenty of scope for them.

1030. Viscount *Ebrington*.] In the absence of legislative measures, there is plenty of scope for their doing so with impunity, and even with success?—Yes.

1031. Mr. *Sheridan*.] Did you hear the evidence of Mr. Lindsey Blyth?—Yes.

1032. He gave testimony to the effect, that the drugs which were sent to the hospital were very much adulterated; but that after an examination was known to take place, the articles came to the hospital in a much purer state?—That would show that the fact of their being examined served as a check; but that check ought not to have been required.

1033. It proves the existence of the adulteration?—It does.

1034. Mr. *Moffatt*.] Did that witness say whether those drugs were sent from wholesale or retail houses?—I am not aware.

1035. Viscount *Goderich*.] Does your evidence refer only to wholesale druggists?—Only to wholesale druggists.

1036. When you speak of the honesty of druggists in general, and of their abstinence from selling adulterated articles, do you refer to wholesale druggists, or wholesale and retail both?—I allude to them generally as a body.

1037. *Chairman*.] I understand that you yourself have not conducted any analysis with a view to detect whether these articles are adulterated or not?—No. I can generally tell, from my long experience in the trade, from the appearance of the articles; there are, of course, some articles which require to be tested, and which we do have tested by a person in our own employ.

1038. What articles of manufacture do you purchase?—There are some we do not make ourselves, and which of necessity we are obliged to buy, but we make a point of testing them.

1039. Do

1039. Do you find they are generally correct?—Yes; we have a person on our establishment to test the articles we buy as they come in, and if not approved they are returned.

1040. As a rule, you would scarcely say you have yourself had the opportunity of analysing the compounds of other wholesale druggists, and still less of retail dealers?—Personally, I have not.

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Veneris, 7<sup>o</sup> die Martii, 1856.

# MEMBERS PRESENT.

Mr. Scholefield.	Viscount Goderich.
Mr. Gregson.	Mr. Kinnaid.
Mr. Moffatt.	Mr. Peacocke.
Mr. Sheridan.	Mr. Charles Villiers.
Mr. Wise.	

WILLIAM SCHOLEFIELD, Esq., IN THE CHAIR.

Mr. *William Emerson*, called in; and Examined.

1041. *Chairman*.] YOU are the Manager of what is called The People's Flour Mill, I believe, at Leeds?—Yes. Mr. *W. Emerson*.

1042. How long has that establishment been in existence?—It was established in July 1847. 7 March 1856.

1043. Will you state to the Committee what was the reason for its establishment?—The reason why the society was established was in consequence of the dearth and impurity of the food.

1044. How did you arrive at the fact that the flour was impure?—By the general bad bread. The Yorkshire people buy their own flour, and make their own bread. They have their own ovens. It was generally concluded by the Yorkshire people, and the people of Leeds, that the bread was dear in price as well as bad in quality. Between the price of corn and the price of flour there was a great difference. The calculation of cost is a halfpenny per shilling per quarter, and the price generally exceeded that.

1045. Who were the parties making that complaint; do you recollect any parties in particular, or was it rather a general complaint of the bad quality of the bread?—Of course we had no practical proof, but the general impression was that all kinds of materials were mixed with the flour at that time. I remember one circumstance of a person that had been mixing hall plaster, or Paris white, with the flour, who was brought before the magistrates, and convicted of the offence.

1046. The impression was that the bread was not good, and that the bread was dear, and you established this mill for the purpose of making purer and cheaper bread for yourselves?—Yes.

1047. How many members are there in the society?—Three thousand one hundred.

1048. Are they of the working classes generally?—Principally. We have all sorts of people connected with it at present; bankers, merchants, and magistrates; men of every standing, but principally they are of the working classes.

1049. Can you state the amount of business which you are doing at present?—From 70,000 *l.* to 80,000 *l.* per annum.

1050. What quantity does that represent, as far as you can judge, in corn or flour?—We consume about 400 quarters of corn per week.

1051. Do you ever adulterate your flour?—Never. There is no admixture of anything whatever. It is what we designate pure flour, is made from pure wheat; and our oatmeal is made from pure shellings from oats, and so on in other articles.

1052. Do you put any potato starch into your flour?—We never put anything of any description; it is all pure, genuine flour, and has been from the commencement.

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1053. Mr.

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1053. Mr. *Sheridan*.] Is the bread made from your flour as white as the bread which is generally sold by bakers?—It is not so white.

1054. *Chairman*.] What has been the effect upon your sales of selling bread which was held by the public to be pure bread?—It has caused a great amount of dissatisfaction amongst the consumers; our members complained that we could not produce it at the price that other people did.

1055. Then one of the results which you had in view has not been accomplished, as I understand. You thought you could produce bread at a cheaper price, but you find it rather dearer than that which is paid to ordinary sellers?—Notwithstanding that, taking the present price of flour and corn, we have sold at 2d. per stone less than it was sold at before the establishment of our mill.

1056. Are you now below the dealers in price?—No, about the same price.

1057. Viscount *Goderich*.] But of course all who sell adulterated flour sell at a lower price?—The lower qualities are sold at a much lower price; it varies from 4d. to 6d. a stone.

1058. *Chairman*.] That is inferior flour, is it not?—Yes; we make but one kind; we make it from the best of wheat.

1059. What do you do with your seconds?—We do not make any seconds. You must understand that the flour is made all at one time; if you manufacture two kinds of flour it is made at two different processes. We take about four pounds or five pounds of bread meal out of the flour, which is generally termed by millers "the greys," for the purpose of making it better.

1060. Are there any other modes of mixing flour, or any mixings with flour, which may be considered as adulterations?—There are many ways which are not considered to come within the pale of any penalty.

1061. Should you consider them adulterations yourself?—Yes; we are not allowed to do anything of the sort; in fact, we have no interest in doing it, because we consume it ourselves.

1062. What are those adulterations to which you refer?—Barley, for instance; barley is about 40s. a quarter, and wheat perhaps 70s.; one quarter of barley to three quarters of wheat will make a good flour; that lessens the price considerably, perhaps 3d. or 4d. per stone.

1063. Is that a common adulteration?—Very common. There is also Egyptian wheat, which is a very inferior quality of wheat, having been washed and dried; it does not appear to have much nutrition in it; it tastes quite mildewy; we designate it chewing sticks. This Egyptian wheat is about 20s. per quarter less than our corn, and it tends to reduce the price of flour very much; still it is deceptive, it looks very beautiful to the eye, being quite white.

1064. Have you reason to suppose that the flour which is so mixed is sold at a lower rate than that which is pure?—Most undoubtedly.

1065. At a very much lower rate?—Yes; and that is one of the greatest obstacles with which we have to contend.

1066. Mr. *Sheridan*.] After the flour is sifted and prepared for making bread, what becomes of what is called, in some parts of the country, sharps, which is the inferior flour?—The sharps are used for pigs; the proportions run thus: a quarter of wheat will produce about 25½ stones of flour, about 4 lbs. to 5 lbs. of bread meal, 2½ stones of fine sharps, and about five stones of what we call bran or coarse sharps.

1067. Mr. *Wise*.] Are the sharps sold in the town?—Yes, for pigs. I intended to have brought some samples to show that the fine sharps are mixed with oatmeal, which tends to lessen the price of oatmeal. You cannot detect it with your eyes; you cannot discover but what it is oatmeal. One quarter of fine sharps mixed with oatmeal will lessen the price 2d. or 3d. per stone.

1068. How many families does your society supply with pure flour?—We compute about 4,000.

1069. In Leeds?—Yes, and the neighbourhood.

1070. Viscount *Goderich*.] How many individuals does that represent?—About 20,000.

1071. *Chairman*.] You have already stated that the society does not consist entirely of the working classes, and that you have some other persons associated with you?—We have some of the middle class associated with us.

1072. Under what law is your society established?—We are registered under what is termed Slaney's Act, the Provident Societies Act. We were formerly registered under the Friendly Societies Act, but we could not work under that Act.

Act. That Act provided that we should sell to members only, and inasmuch as our members were principally of the working classes, we had no means of getting rid of our offal, therefore we were compelled to enrol under the law for industrial societies.

1073. Are there any other societies of a like nature in Yorkshire?—There are many others; one at Hull, one at Barnsley, one at Bradford, Thirsk, Birstal, one at Keighley, one at Halifax, a very extensive one at Rochdale, and many others.

1074. Mr. *Sheridan*.] When were those societies established?—I believe we were all established nearly together, except some small societies which have been established since, and the one at Hull, which has been in existence many years.

1075. Mr. *Vilhiers*.] What is the date of the Act of Parliament under which you act?—1852.

1076. Have you only been established since 1852?—We were established in 1847.

1077. Then you were under the Friendly Societies Act?—Yes.

1078. You do not limit the number of your customers to your shareholders?—Not at all; it is quite open.

1079. Then this is a trading company like any other?—Yes; it is a trading company so far as the profits and losses are concerned.

1080. In point of fact, you get as much business as you can?—Yes.

1081. Do you render a regular profit-and-loss account to the shareholders?—Yes.

1082. Is this society answering?—Yes.

1083. What is the security that your flour is pure; what checks have you that what you profess to sell is perfectly pure?—It is impossible for it to be adulterated.

1084. What are the checks which you provide to insure the purity of your flour?—We buy the best of wheats; in the next place, we have a Board of Directors to see that there is no admixture. I represent that Board of Directors to see that there is no admixture in the mill, or in any of the shops where it is sold; it is sold through our own agents; we do not allow any to be sold by the public, nor do we allow our own agents to sell any flour belonging to the public, consequently it is confined entirely amongst ourselves; we not only produce the flour, but we distribute and consume it.

1085. That is like everybody else. Of course all millers have their own agents to distribute; what particular checks have you to secure your agents being honest?—I do not see any moral possibility of their being dishonest, inasmuch as they have no material to mix with our flour; they could not mix any other material with it, without being found out.

1086. What is the security for the honesty of the Board of Directors itself?—The Board have no interest in mixing; the Board make their own flour for their own and their families' use, and they would never mix deleterious substances with the flour, for their own stomachs' sake.

1087. It is a trading company, deriving profit from its business. We only want to know in what way this company is distinguished from other companies who have an interest in selling good articles, but who still sell inferior articles. You set up as being superior to your neighbours; what security have you that you are better than other people. I do not in the least doubt that the company is realising all it professes, but I want to know what security you have that you are offering to the public pure flour?—I do not see any possibility of its being otherwise. The Board of Directors have no interest in mixing; they will have it pure for their own sake. The whole of the agents and servants are under the control of the Board of Directors, and any one attempting such a thing would be dismissed from his situation in one moment.

1088. If you were to do that which you almost charge other tradesmen with doing, your profits would be larger, would not they?—Most undoubtedly. We could manufacture flour at 4d. per stone less; we never mix except for experiment. I made a mixture to bring before our general meeting at the last half year, of one-fourth barley, to show what could be done; that bread was made at 4½d. per stone less than the price I have stated. It was acknowledged by the members at the meeting, who did not know what it was made of, to be very good bread; they said they did not wish to have any better.

1089. Do you invite people to examine your flour?—The directors have appointed two inspectors, who inspect weekly.

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1090. Still the inspectors are persons doing your business?—They have no interest except doing justice to the whole of the members.

1091. Mr. *Wise*.] As I understand your evidence, your company was established as an act of self-protection?—Yes.

1092. Therefore you are especially interested in taking care that you have a pure and good article?—We have a pure article.

1093. Has not this society originated from the great amount of adulteration which was discovered at Leeds?—That was the origination of it.

1094. Have not you had a public meeting upon this subject, and appointed two public prosecutors?—The appointment of agents was not at a public meeting.

1095. Were not two persons appointed to look after all articles of food, particularly flour?—Yes.

1096. Mr. *Villiers*.] Do you undersell the regular trade?—No.

1097. Mr. *Wise*.] Have any proceedings been taken in Leeds under the 6th & 7th of William the 4th, which is the Act of Parliament for punishing millers for having adulterated flour on their premises?—I believe there has been only one case in Leeds; I have not the date of it. A person was convicted of putting hall plaster, or plaster of Paris, into flour.

1098. What was done in that case?—I am sure I do not know whether he was imprisoned for one or two years.

1099. Was not he fined?—He was fined, but he had nothing to pay it with.

1100. Mr. *Peacocke*.] I presume the inspectors of whom you have spoken are shareholders?—Yes.

1101. And they participate in the profits like the other shareholders?—Yes.

1102. You say that the adulteration of flour has been going on at Leeds for a long time, but you have only known of one prosecution?—There has only been one in Leeds, but we have had a great many in the immediate neighbourhood.

1103. Was there any difficulty in procuring convictions?—Not at all. I am in possession of some facts. There have been two convictions at Keighley; that is in our immediate neighbourhood; and there have been two at Wakefield, and some in Pontefract; those are all in the immediate neighbourhood of Leeds. I believe that a sample has been sent up to London for Professor Taylor to analyse, respecting the Leeds millers.

1104. Did you say that you mixed barley with your corn?—No; I merely did so as an experiment.

1105. You did not sell any of that flour?—Never a pound.

1106. Viscount *Goderich*.] You have stated to the Committee that your own members were about two-thirds or three-quarters of your customers?—Yes.

1107. Consequently if you were to adulterate your flour in order to increase the profits of those members, you would be directly cheating them in one way for the purpose of putting money into their pockets in another?—Most undoubtedly.

1108. Mr. *Sheridan*.] What are the duties of the directors of your society? The duties of the directors are, as a deliberative body, to order and direct the working of the mill.

1109. Did not you say that the directors undertook to ascertain whether the articles were pure?—I said that the directors deputed two of their own body to visit the mill weekly to see if everything was right.

1110. Do the directors receive any salary?—Not a farthing.

1111. Viscount *Goderich*.] They only receive their own proportion of the profits?—Not any more than their own proportion of the profits. No member can hold more than one share; a share was a guinea originally.

1112. Mr. *Sheridan*.] How much of the directors' time is occupied?—They meet once a month, sometimes oftener. The Board of Directors is divided into three committees, the Finance Committee, the Mill Committee, and the Stock Committee.

1113. Mr. *Villiers*.] I think your society is not exclusively composed of the working classes?—Not altogether.

1114. Can you tell the proportion of any other class in the society?—I cannot. I should say we have men of every trade in Leeds connected with the mill.

1115. Can no one hold more than one share?—No, except by accumulation of profits.

1116. And that he purchased for a guinea. What does he get for his money?—Five

—Five per cent. interest and a bonus according to the profits made. All our agents are our own, and if I go to fetch a stone of flour the agent gives me a tin ticket, representing one stone. At the end of the half year the whole of those tin tickets are brought in and entered in a column; at the end of the half year a balance-sheet is made out. There are 20 stones to the bag, and every person who has had one bag gets 1s., besides the 5 per cent., if the business makes it. Many consume five bags, and he gets 5s. for the five bags.

1117. What proportion of persons are customers who are not shareholders?—We think about one-third is consumed by the public in proportion to what is consumed by the shareholders, as near as can be ascertained by our returns.

1118. Is that business with the public an increasing business?—We have not been able to increase the business the last three years, because we were doing as much as we could with the stones we had. We had got to full employment three years ago, and we are only now putting down more stones.

1119. Mr. *Sheridan*.] How many pairs of stones have you now at work?—We run 10 pair of French stones night and day.

1120. Mr. *Peacocke*.] Do you find your flour preferred by the public?—We think that the sales, amounting to one-third, is a satisfactory proof that it is liked by the public.

1121. Therefore you mean to say that your business is only limited by the amount of capital?—By the want of productive power.

1122. Viscount *Goderich*.] Can you state to the Committee the amount of business you have done since you commenced operations?—Yes; I can also give the Committee one of our last balance-sheets (*handing in the same*). The amount of business done since we commenced has been 331,668 *l*.

1123. What was the amount of capital subscribed with which you started?—The whole amount of capital which has been paid by the society amounts to 4,398 *l*. altogether.

1124. How much have you paid to members in the shape of bonuses?—We have returned to the members 5,289 *l*.

1125. Mr. *Villiers*.] The society has been profitable, as I understand, hitherto?—Yes; the shareholders have got their money back and 891 *l*. over, whereby it is evident that the society sells at a profit.

1126. If there was a loss upon whom would it fall?—Upon the whole of the shareholders.

1127. Is it any part of the business of this society to inspect the bread or flour of other tradesmen?—I believe that the members inspect other people's flour by purchasing it every week, perhaps every day. They frequently bring us samples of other people's bread, to show at what price it can be bought.

1128. Has any analysis of the bread been made to discover the particular ingredients with which it is mixed?—There is an analysis given here in a letter from Mr. Dresser to the editor of the "Leeds Mercury."

1129. Was this promoted by the society?—No.

1130. Is it any part of your business to try to check fraud, or check the adulteration amongst bakers or millers?—We have no system of checking it, except by calling public meetings in all the various localities, and explaining what the flour can be manufactured at.

1131. It is not a part of the business of your society to detect adulteration?—No.

1132. You do not desire your inspectors to purchase flour from other quarters, for the purpose of detecting adulteration?—No. Perhaps I may be permitted to read a short letter which was addressed to the editor of the "Leeds Mercury." "October 13th, 1855. Alum in bread. To the editor of the 'Leeds Mercury.' Gentlemen,—I beg to hand you the following analysis of bread purchased from five of the principal bakers in the town. No. 1, 4 lbs. of alum for 20 stone of flour; No. 2, 3 ½ lbs. of alum for 20 stone of flour; No. 3, 3 lbs. of alum for 20 stone of flour; No. 4, 2 ¼ lbs. of alum for 20 stone of flour; No. 5, 2 lbs. of alum for 20 stone of flour. The alum is introduced in order to give inferior qualities of flour the appearance of superior qualities, and when taken by the consumer in these large quantities must have a very injurious effect on the system. Yours respectfully, C. L. Dresser."

1133. Is Mr. Dresser a chemist, residing in Leeds?—I believe, by business, he is an engineer; he is a noted man in Leeds; he appears to be a professional chemist.

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1134. Under

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1134. Under the Provident Societies Act is the liability of the shareholders limited?—No.
1135. Therefore the shareholders might be considered partners according to law?—Yes.
1136. So that if a wealthy man had taken a share he might be liable for the whole loss?—Yes.
1137. Do the shareholders know that?—Yes.
1138. *Chairman.*] Can you suggest any means of preventing adulteration?—I think that the appointment of an inspector of corn, as well as flour, would prevent it in a great measure.
1139. *Mr. Villiers.*] Do you mean a public officer?—A public inspector.
1140. *Chairman.*] In what way should he perform his duties?—He would have to watch all that came to the market, visit the mills, and see what they were mixing with.
1141. *Mr. Villiers.*] He would have enough to do, would not he?—He might do it very easily if he was an active man.
1142. For the town of Leeds you must have several inspectors?—One would be sufficient, and he would have plenty of time to spare.
1143. It would be known that he was available for the purpose, and perhaps that would prevent a good deal of adulteration?—I believe the respectable millers would not care how soon there was an inspector. They are compelled to mix to make it as cheap as other people; and it is not their wish or desire to do so.
1144. You do not know that your company has checked any adulteration, except in the manufactory with which you are concerned?—Only by exposing others.
1145. You do not think there is at present any sufficient check to adulteration?—No.
1146. *Mr. Peacocke.*] At whose instigation have the prosecutions to which you have referred been undertaken?—I do not know at whose instigation; I believe it has been that of the public authorities.
1147. Not of private individuals?—No.
1148. I think you said that your capital was about 3,000 shares of 1 l. each?—Yes, originally.
1149. What are the shares worth now?—The shares are worth 2 l. 10 s. each.
1150. I see by your balance-sheet that the net profits are 800 l. a year, so that that is rather better than 26 per cent.?—It would be a very small percentage, if you look at the amount of business done; it is a very large net percentage on the amount of original capital. We were worth from 7,000 l. to 8,000 l. last year.
1151. *Mr. Wise.*] Had you any difficulties to contend with on the first establishment of this society?—Yes, many.
1152. Was there any considerable opposition on the part of any of the inhabitants?—The millers generally were opposed to it.
1153. Since it has been established has it got into favour?—Very much so; the millers themselves do not feel so much opposed to it as they did originally.
1154. Do you think the establishment of this mill has tended in any degree to improve the character of the bread?—It has improved the quality of the flour, and also lowered the price.
1155. *Mr. Sheridan.*] Has it interfered with the business of other men?—Not at all, except in competition.
1156. *Mr. Villiers.*] Like all other competitions, it has affected existing interests?—Of course every new beginning must affect the original stock.
1157. What led to the establishment of this mill; was it a general sense of the evil of adulteration, and the perception of its consequences, or was it a single individual that originated the society?—It was a simultaneous origination, as it were, both in the town and the country.
1158. The way in which flour was adulterated was felt to be a great evil?—Yes; there were many meetings upon the subject; the fact proves itself, by their having entered, within a few months of its origination, 2,600 members.
1159. It was not started by one individual; there was a general sense of the evil existing at the time it was started?—Yes.
1160. *Mr. Wise.*] Have the consumers of your bread experienced any improvement

improvement in their health, or have they discovered that the bread is more wholesome in any way?—We do not know that they are never affected by it or disorganised. At the time I was speaking of, respecting the hall plaster being put in, there was an old lady that had not a passage for eleven days.

1161. With reference to those frauds which are hurtful to health, do not the inhabitants of Leeds, as represented by you, think that there is good reason for organising some public means for preventing this sort of thing?—I believe so.

1162. You think that there ought to be some public officer who should inspect articles of food?—Yes.

1163. In your opinion, such an appointment would be extremely well received by the public?—Yes, it would. I have a report of a meeting which was held at Leeds, at which the mayor presided.

1164. Were there any resolutions passed at that meeting?—I do not see any except appointing parties to keep a strict look-out. It appears that the meeting was attended by the mayor, Mr. T. George, the Commissioner of Health, Mr. Eddison, Mr. Henry England, Mr. Armstead, Mr. Holmes, Mr. Ward, Mr. Ludolf, Mr. Lloyd Jones, and others. The mayor was called to the chair, and said that the subject of the adulteration of articles of food was one of great importance, and that it was highly desirable that some means should be adopted to put a stop to such adulterations.

1165. Is there not a general feeling in Bradford, Leeds, and many other towns of Yorkshire, that flour is largely adulterated, and that some steps ought to be taken to put a stop to such a system?—Yes. I can give a few cases in which millers have been convicted. On the 6th of March 1855, at Keighley, John Blakey was fined, for having adulterated his flour with alum, 20 l. and costs, or one month to hard labour; Rushworth Brothers, of Ingrove, near Keighley, were called to answer for a similar offence, and were convicted and fined the same amount. On the 3d of December 1855, Mr. East, of Nottingham (that is not in our immediate neighbourhood) pleaded guilty to having mixed his flour with terra alba; that is a kind of white earth; and he was convicted and the flour was condemned. On the 12th of February 1856, Abraham Ginn, of Wakefield, was fined 5 l. for having adulterated flour, and a seizure was made of 84 bags of flour, which was condemned as being unfit for food, having been mixed with alum.

1166. Did you ever hear of the Bradford case, in which some wheat was steeped in sulphuric acid and water, and then dried?—I have no report of it; I have heard it rumoured. On the 16th of February 1856, George Morritt, of Pontefract, was convicted, having pleaded guilty, and fined 15 l. for having alum in his flour.

1167. How many years have the other mills been established?—I believe the Hull mill has been established half a century.

1168. *Mr. Peacocke.*] Under the present law convictions appear to have been obtained; why do you wish for any more stringent enactment upon the subject?—Because it appears to be anybody's business and nobody's. If there was a person appointed for the purpose of seeing that we had pure flour it would be his duty and business.

1169. Do not you think that the public is quite capable of taking care of itself?—I do not think they are; I think we have practical proof that they have not done so.

1170. Do not you think that the system of Government interference and protection is likely to make men take less care of themselves?—I should think not.

1171. *Mr. Wise.*] Would it not be a very serious loss to a poor man to spend two or three days in getting summonses and conducting a prosecution?—It would bring him into an awkward position amongst the shopocracy and mill interest; it would be very much better to be done by some person appointed for that purpose.

1172. *Mr. Peacocke.*] Putting flour out of the question, is there a strong feeling amongst the working classes upon the subject of adulteration?—Very strong, and that is proved by the co-operation amongst them.

1173. *Mr. Villiers.*] Who would be liable in your society if any adulteration were discovered in the flour which you sold?—The whole society.

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1174. In

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1174. In any proceeding before the magistrates who would be the responsible party?—Very likely myself, as manager.

1175. Do the society hold one person directly responsible if there should be fraud?—They do this: the Board of Directors are the executive; I represent the Board of Directors, and, of course, should be quite liable to anything and everything connected with doing anything wrong.

1176. In any of the proceedings to which you have referred, do you know whether the magistrates distinguished between the ingredients discovered; some might be innocent, though only used for the particular purpose of lessening the price?—I believe the magistrates have never convicted in any one instance for mixing, except there has been an injurious material, either alum or hall plaster, or terra alba, which is quite injurious to health; they have never fined in one single instance for mixing barley.

1177. Have you known any case brought before the magistrates for mixing barley with wheat?—There has been no case proved.

1178. The magistrates have never inflicted a penalty in such a case?—Never, except for mixing alum, or some deleterious ingredient.

1179. Under what Act do you proceed against any person for adulteration in Leeds?—The 92d section of the Municipal Act.

1180. That is the power upon which the municipal authorities proceed?—Yes; and at Wakefield it is something similar.

1181. You do not know the Act in force, do you?—I believe it is a private section that they have in the Municipal Act.

1182. Do you know whether there is any distinction made in the Act itself between articles which are deleterious and those which are not so?—When Mr. Ginn was charged he was charged under the 6 & 7 Will. 4, c. 9, s. 12.

1183. Mr. *Wise*.] Do you think if a miller were to state that he put peas and beans into his flour that the people would buy it?—They would not.

1184. Mr. *Peacocke*.] Are you prepared to state that the artisans and operatives are restrained from prosecuting, especially from the fear of persecution by what you call the "shopocracy"?—I believe the working classes would not attempt it; they would not like to be brought into disrepute; they would come into contact with the public.

1185. Mr. *Moffatt*.] And why?—Very likely the working man's master's brother or cousin might be connected with the shop, and it might have the tendency of sacrificing his means of subsistence.

1186. Do you mean to say that that applies generally to the artisans of Leeds, and the towns in the West Riding?—I have never known a case attempted to be brought before the magistrates by a working man.

1187. Your belief is, that that arises from the fear of losing his employment?—I look at it in that light; it appears to me that he would bring himself into a very awkward position.

1188. Your impression is that the master manufacturers encourage these adulterations?—No, I did not say so.

1189. Did not you say that the artisan was deterred by the fear of being discharged from exposing these alleged frauds?—If you had been, as I have been, connected with the working classes, I am sure you would see the awkward position a working man would be in if he were to attempt to bring a miller or one of the shopocracy before the magistrates; he would be pointed at as meddling with matters far above his position.

1190. By the "shopocracy" do you mean the shopkeepers?—Yes.

1191. Mr. *Peacocke*.] What you mean is, that the shopkeepers stand by one another?—Of course they will endeavour to assist each other: what I mean is, that a working man would not like to be brought into such a position as to take a prominent part in such a proceeding.

1192. Do you mean to say that a shopkeeper would sympathise with a brother shopkeeper who was convicted of adulteration?—Of course. I will give you an instance: I was at Wakefield a week since, and I was speaking to a factor who had been a seller to the man who was convicted; he said, "I have just had one of the largest millers here, and I told him about Mr. Ginn having been fined for having adulterated his flour; and he said, 'Well, he is only one out of us; it might be me, or any one else.'" There was a sympathy and a fellow-feeling.

1193. Mr.

1193. Mr. *Moffatt*.] I understand you to inform the Committee that the artisan is afraid of the shopkeeper, and that is the reason why he does not like to prefer these charges?—I believe the artisans would not attempt any such proceeding.

1194. Would that be from a fear that the shopkeeper would refuse to supply them with goods?—No.

1195. What then?—They would not like to become public inspectors, for the purpose of convicting any man.

1196. Mr. *Wise*.] Unless they had some powerful protector to take up the case?—Unless they were very independent working men.

1197. Mr. *Villiers*.] It would get them into trouble, somehow?—I think it would be a very unwise step for them to take, so far as I know the position of working men, and I have been amongst them all my life.

1198. Mr. *Wise*.] As far as you carry out this mill, you supply the thing asked for?—Yes.

1199. That is the principle upon which you proceed?—When we call it flour we mean wheaten flour, and when we make oatmeal we make it from shellings, not mixed with sharps; so with barley meal or ground oats, whatever we designate it, such it really is without variation.

Mr. *Edward Farrand*, called in; and Examined.

1200. *Chairman*.] YOU are connected with a Corn Mill Society situated in Rochdale?—Yes.

1201. In what capacity do you serve that society?—As bookkeeper and traveller.

1202. You are, I suppose, thoroughly conversant with the manner in which it conducts its business?—Yes.

1203. Will you state to the Committee what was the origin of that society?—The origin was with a view to get a pure and unadulterated article.

1204. Was there any demand on the part of the public for such a society?—Yes.

1205. In what way did that demand show itself?—The public were dissatisfied with the articles that they had been supplied with.

1206. Had you any public meeting at Rochdale upon the subject of the adulteration of bread?—There was a public meeting, and that was the purport of it.

1207. Was this society established on the same principle as the one we have heard has been already established at Leeds?—Nearly the same.

1208. The objects are the same?—Yes.

1209. What has been the result of the proceedings of that society since you have been connected with it?—The result has been quite different from the one at Leeds. After the first nine months we found ourselves deficient 450 £, through not being able to compete with the other millers. The members called out for a pure article; but when it was offered, they were not satisfied with it.

1210. Why not?—The colour did not please them; they said the bread was sweet, but the colour was not good enough for them; they wanted it white.

1211. Was that the only objection?—Yes.

1212. Was there no objection in point of price?—No; there was no objection in point of price.

1213. Were you as low in price as other dealers?—We ranged about the same price.

1214. What was the consequence of this complaint on the part of the shareholders?—We were compelled to adulterate with alum to gain the customers, and bring back the 450 £, which had been lost.

1215. And you only succeeded upon the principle of mixing alum with the bread?—We are working and turning out now a pure article. The people seem to be more convinced than they were at the first start that an impure article is not good for the constitution, and now we are doing three times the business that we were doing after we began to adulterate.

1216. You carried on business for nine months with a pure article?—Yes.

1217. How long did you carry on business with the adulterated article?—Three years perhaps.

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1218. With what results pecuniarily?—We brought back the 450*l.*, and worked the machinery perfectly clear.

1219. Why did not you go on, finding it was, in a pecuniary sense, so beneficial, with your adulterations with alum?—The first cause was a conviction or two that had taken place in the neighbourhood.

1220. Mr. Villiers.] Were those convictions of yourself?—No.

1221. Chairman.] Then you determined to go on selling a pure article?—Yes, unless the putting in of rice be considered an adulteration; that is done even yet.

1222. At the expiration of three years you entirely abandoned the use of alum in flour?—We did.

1223. What was the result the second time that you attempted to make pure bread?—At first there were a great many complaints indeed. We had samples of bread brought to us which had been made from flour turned out by other millers. They said, "This bread is nicer than the bread made from the flour you turn out, and we buy it 2*d.* a score cheaper."

1224. Did they mean to say that it was better in flavour, or in colour only?—Better in colour; there was no complaint about the sweetness of the bread.

1225. They liked it to please the eye?—Yes, and the eye seems harder to please than the stomach.

1226. In spite of these complaints, your business has increased since you abandoned the adulteration with alum?—Yes.

1227. Mr. Sheridan.] Has the colour improved?—The colour is better than it was at the first start, because we have made improvements in the machinery; the colour is not now so good as it is with the alum in it.

1228. Mr. Wise.] Do you think the agitation under this inquiry has tended to open the eyes of people requiring very white bread, because they are aware that it cannot be so white unless alum is put into it?—They are well aware of it.

1229. The more aware they become of the custom, the less dissatisfaction they will feel with coloured bread?—Yes.

1230. Mr. Villiers.] Have you any prospectus of your company with you?—I have not. We do not publish our reports. We merely write them out and bring them before the members.

1231. How many members are there in your society?—Nearly 300.

1232. Have you a Board of Directors?—We have a Board of Directors.

1233. Are you under the provisions of any particular Act?—We have been under the Friendly Societies Act up to the present time. Last week we had a meeting, and we formally dissolved the company, pursuant to taking advantage of the Provident Societies Act.

1234. Are you not obliged to publish a list of the directors and the amount of capital under the Friendly Societies Act?—There is no compulsion, only so far as returning a report to Mr. Tidd Pratt each year. We have a form sent down which we have to fill up each year.

1235. That report has been furnished?—Yes.

1236. What does the report comprise?—It simply comprises the amount of capital invested and the number of shareholders; that is nearly all it does. We are put into this difficulty; the form sent down is not at all adapted for the purpose, and we cannot fill it up properly.

1237. Are you not required to return the names of your directors?—Not under the Friendly Societies Act, but under the Provident Societies Act we are compelled to do so.

1238. Does not the return to Mr. Tidd Pratt contain the names of any of the members of the society?—Merely the secretary and the trustees.

1239. Are you the secretary?—No; there is a separate secretary. I merely take the management of the books belonging to the mill.

1240. In what year was the mill established?—1851.

1241. You said there was a public meeting before it was established?—Yes.

1242. Who were the leading persons upon that occasion; who actually was elected your chairman?—I cannot say; I was not at the meeting.

1243. You were not connected with the mill at first?—No.

1244. How long have you been so?—From just at the end of the nine months, when they found themselves 450*l.* deficient.

1245. You.

1245. You joined the society when they began to adulterate?—I was appointed their servant at that time.

1246. Had you any experience in that line before?—None; I came out of a factory.

1247. Did you know that they were going to change their system?—No.

1248. Viscount Goderich.] You have only to do with the book-keeping?—I have only to do with the book-keeping.

1249. Mr. Villiers.] There were complaints made that selling pure bread would not answer?—Yes. The first time I went out to solicit orders it was a very unpleasant affair; so much so that I wished myself back again in the factory, and that was bad enough.

1250. What do you mean by its being an unpleasant affair?—I went out to solicit orders from our own members, and they complained so much about the quality that it made it really unpleasant.

1251. I thought you said they only complained of the colour?—It was the colour they complained about.

1252. You said just now that they complained of the quality?—We take that as the quality; people judge of the quality of the flour by the colour, in most instances.

1253. What did they complain of?—They said the colour was not good enough; they said it made their bread a bad colour; in fact they said it was as black as their hat.

1254. That was their objection to giving you fresh orders?—Yes.

1255. You cannot tell us whether there was any bad flour in the bread which they had before?—There was not.

1256. That you do not know of your own knowledge, because you were not connected with the company?—No; only we had it at our own house; there were a great many complained at the time in our own house about it: our family was as bad as anybody else.

1257. Viscount Goderich.] You dealt with the company before you worked for it?—Yes.

1258. Mr. Villiers.] Did the white bread disagree with you?—No; my family did not like the colour of the pure bread.

1259. You did not discontinue your custom on that account?—No.

1260. You had no other reason to complain?—No.

1261. What were the arrangements made by the company, when you joined it, for adulterating the flour?—The committee of management agreed that they should begin to put alum into the flour; that was all the arrangement made.

1262. What did they mean by putting in alum; did they consider that that was the ingredient necessary to give it the proper colour?—Yes; and it was found to answer.

1263. Mr. Sheridan.] It was not the fact that the bread was as black as you described?—No.

1264. That could not be from pure flour alone?—It was the fault of the machinery as well; but that was only one part of the fault; there is no doubt they exaggerated the matter when they said it was as black as their hat.

1265. Was it darker than pure flour generally is?—It was rather darker at that time.

1266. How do you account for that?—There was something wrong in the machinery, but that was altered.

1267. But the machinery would not make the flour black, would it?—If the wheat was not sufficiently cleaned, it would.

1268. Mr. Wise.] I presume that the machinery did not grind it properly?—No, it did not clean the wheat properly.

1269. Mr. Villiers.] Do you mean to tell the Committee that the people preferred the bread in consequence of the adulteration?—They did not know it for a while; the committee never told them; and after a time they found it out, and they were better satisfied than they had been before.

1270. You found that practice extended your custom?—We got it back directly.

1271. And you really ascribe that to the introduction of alum?—Entirely.

1272. You say that this adulteration went on for three years?—Yes. There was in the meantime an improvement made in the machinery. Our pure flour

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1273. You have no doubt that there was some defect in the machinery, and that it was improved at the time that you began to adulterate?—Yes; but I may say that the improvement was made in the machinery a little prior to the adulteration with alum; it did not act so well as they wanted it to do, and then they introduced alum.

1274. What was the effect when you discontinued the alum, because you would expect the colour to be the same as it was before?—We had a great many complaints, as we had before, but we did not hear so much of it as we did before.

1275. I thought you said there was a general complaint?—The complaint was about the adulteration of the bread.

1276. Who complained then; it must have been the white bread they complained of, because they found it unwholesome, or somebody told them it was not pure?—They expected a good colour from the pure article; at least they expected a better colour when it was pure; but they were deceived.

1277. Did anybody complain about the adulteration of the bread when you began to adulterate?—They did not complain about the bread being adulterated, as they had done before; they could not when they knew that they were doing it themselves.

1278. Now you sell pure flour, what is the state of the public mind upon the subject?—They are more favourable to the pure flour than they were before, though we have some few complaints now; we cannot please everybody; every one is not yet convinced of the injury that adulterated bread does to the constitution.

1279. How do you recommend your society to the public now; by selling pure flour?—Yes; it is one of our laws now that the article should be perfectly pure.

1280. Viscount Goderich.] I think you said that you mixed rice with the flour now?—Yes; we do not consider that adulteration. I do not know whether it would be adulteration in a legal point of view.

1281. Mr. Villiers.] Why do you mix rice with the flour?—It is to improve the colour; that is the point aimed at by all millers.

1282. Is rice the same price as flour?—Yes; there is no advantage; rice is about the same price as wheat; if there was a difference in price, there is so little put in, that it could not make any material difference in the profits made by the concern; the quantity is, I believe, about four lbs. of rice to a quarter of wheat; that is to 480 lbs.

1283. What is the security against your adulterating bread again?—There is no security against it whatever, only as it is mentioned in the law, they can demand that the law shall be fairly carried out.

1284. Has there been any conviction against your society?—No; and not against any co-operative society; there has been no conviction for adulteration of any description.

1285. Since your society has been established has any conviction been procured against you?—No, none at all.

1286. Mr. Wise.] Are you aware that rice, when ground, absorbs a great deal more water than flour?—It does; that is no profit to the miller. We only sell flour; we do not sell bread.

1287. With regard to alum, you did not put that alum, I apprehend, into the flour with a fraudulent intention, but with the object of suiting the taste of the shareholders?—Just so.

1288. They did not like the pure bread, and you put it in to please them?—Yes, to please them; their money was going, and they were afraid of losing it all.

1289. Do the public buy at your mill as well as the shareholders?—Yes.

1290. Do they come extensively now?—Not to so great an extent; still we do a little business with the public.

1291. It is confined principally to the shareholders?—Yes.

1292. How did the feeling arise in the public mind at Rochdale that white bread was unwholesome?—Merely from the statement that has been made in the newspapers.

1293. They

1293. They found that the application of alum enabled an inferior flour to be used and make it look white?—Yes, just so.

1294. Mr. Moffatt.] How many customers have you on your books that you supply with flour?—Our flour is sent out to the agents, and they retail it; we chiefly supply the different co-operative stores. There are a great many co-operative stores in the neighbourhood of Rochdale, and those stores have money invested in the mill, and they appoint a person to represent that money, and purchases are made in that man's name, and the flour goes to the shop where they retail it.

1295. Have you formed an estimate of the number of people who consume the flour that comes from your stores?—Perhaps about 10,000.

1296. Do you think most of those people were aware, after they had complained of the dark colour of the bread produced from your flour, and the alteration was made, that it was adulterated with alum to give it a whiter colour?—After a time we made no secret of the matter; we told them what had made the improvement.

1297. Did you find the consumption largely increase while the customers had that knowledge of the adulteration?—It above doubled itself.

1298. Mr. Villiers.] You were not able to continue the adulteration; you were obliged to change the system?—Yes; it was done from the fear of conviction at first.

1299. Chairman.] The prejudice in favour of alum has passed away now, and the people prefer the purer bread, although the colour is not so satisfactory?—They do.

1300. Mr. Sheridan.] Should you have continued the custom of using alum if the fear of prosecution had not deterred you?—We might have done so for a little time longer. I think it would have died away now even if that prosecution had not taken place.

1301. Was that in consequence of having made up the deficiency of 450 l.?—There was such a noise in the newspapers of the injury that was being done to the constitution by the use of alum that people began to be convinced that it was injurious.

1302. Mr. Villiers.] What was the difference in price before and after you adulterated your flour?—The only benefit we got from it was an increase of trade.

1303. Mr. Moffatt.] Did you find, amongst the 10,000 people whom you supplied, that the adulterated flour produced any prejudicial effect upon the health of the people?—We could not see any difference.

1304. Did you hear any complaints of its being prejudicial to their health?—I only speak from a matter of opinion.

1305. Do you know any fact of its having been alleged that when they took the white bread instead of the brown bread, their health was worse in consequence of taking the white bread adulterated with alum?—I never heard of such a fact.

1306. Chairman.] I presume if they suffered they would complain to their medical man rather than to you?—I never heard anything of the sort.

1307. Mr. Moffatt.] What proportion of alum was mixed with the flour?—About 1 lb. to a quarter of wheat.

1308. Mr. Sheridan.] How many loaves would that make?—It would make from 17 to 18 score of flour.

1309. What quantity of alum would there be to the 4 lb. loaf?—It would be a very small fraction.

1310. Merely sufficient to make the bread a whiter colour?—Yes.

1311. Mr. Moffatt.] Is that proportion of admixture of alum the quantity generally used by the trade?—I do not know. When we ceased adulterating other people were compelled to cease, through the noise which had been made in the newspapers. There was not that material difference between our bread before it was adulterated and afterwards as there was with other people's; we found many customers that we could never please before came to us then, and we have kept them ever since.

1312. The bread generally was rather of a darker colour, in consequence of the bakers and flour dealers ceasing to use alum?—Very nearly all the people in our neighbourhood bake their own bread; we have not a single baker's shop about us. The bread generally was of a darker colour after there had been

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been one or two convictions than it was before; not only ours, but other people's.

1313. Was there any other mixture besides alum put in the bread at the time you adulterated it?—No.

1314. No potato starch?—No.

1315. Mr. Villiers.] Or plaster of Paris?—No.

1316. Mr. Peacocke.] Do you openly avow to the public that you adulterate with rice?—Yes; any one has the chance of going through our mill and seeing any portion of it.

1317. You do not mark it at all?—No, we tell them what it is.

1318. Mr. Sheridan.] Is there much difference in colour between the bread made of your flour and bread made of flour adulterated with alum?—Yes, there is a difference; it is of a darker description.

1319. Mr. Peacocke.] Have there been many convictions for adulteration about you?—There have been no convictions exactly in our neighbourhood. In the neighbourhood of Halifax and Wakefield there have been various convictions, of which Mr. Emerson has spoken.

1320. Is there a feeling amongst the working classes in favour of public inspectors?—Yes.

1321. Are you in favour of public inspectors?—I am.

1322. Do not you think it would lull the public into a false security?—I do not think it would. Why we complain about the present plan of conviction is, that we do not think the examination of the different flours is general. We think that the parties are picked, and for protection we ought to be put upon one footing, and then it will do.

1323. Do not you think the public can take care of themselves?—No.

1324. You say there is a strong impression amongst the working classes about you on the subject of the adulteration of flour?—Yes.

1325. Do you say, like the previous witness, that the people round Rochdale are restrained from prosecuting from fear of the shopkeepers?—They are.

1326. You have no hesitation in saying that?—None whatever.

1327. In your opinion there is a sympathy amongst shopkeepers, even though one be convicted of adulteration?—Yes. The working people are put in this position, they know if they take any prominent part in a conviction of that description, that they may be picked out by their employers and thrown out of employment, and they will have a difficulty in getting employment.

1328. The conviction in their minds is that they will be marked men?—Yes, that is what they are afraid of.

1329. Mr. Wise.] Do you mean to say that if a miller were convicted of mixing plaster of Paris with flour, all the tradesmen in the town would not be disgusted and horrified, but would sympathise with him in case he were prosecuted?—Yes, they would.

1330. Mr. Moffatt.] And further, you believe that the employer of the artisan would be very likely to discontinue his employment by reason of his having exposed the fraud?—They have a fear on their minds of that taking place.

1331. Is that fear, according to your belief, generally prevalent amongst the artisans of Rochdale?—Yes.

1332. I think you stated that you do adulterate your flour with rice at the present time?—Yes.

1333. You believe that to be beneficial to the colour of the bread?—Yes; we should be very glad to discontinue it if every one was put upon the same footing.

1334. It is more agreeable to the buyer, and there is nothing prejudicial in the article which you mix with the flour?—None whatever.

1335. In the case of inspectors being appointed, I apprehend your flour would be subjected to seizure, and you would be subjected to punishment for selling an adulterated article?—If we did adulterate; if we understood that mixing rice was considered adulteration, we should drop it at once.

1336. Mr. Wise.] Perhaps you are aware that in the Act of Parliament rice is permitted to be mixed with flour?—We never could be satisfied upon that point.

1337. Chairman.] It is not forbidden?—No.

1338. Mr.

1338. Mr. Wise.] Are you aware that the mixture of bean meal or rice meal is not illegal?—I was not aware. We considered anything that would reduce the price of the article adulteration.

1339. Viscount Goderich.] You say that mixing rice with the flour does not reduce the price?—No.

1340. Mr. Peacocke.] Do you advertise that your flour contains rice?—No.

1341. Mr. Wise.] You do not hide it from the public?—No.

1342. Viscount Goderich.] If any of your customers asked you, you would be prepared to state what it was at once?—Yes. We are compelled with oatmeal to mix fine sharps; we call them thirds; and the bread bakers do not like it unless it has the thirds mixed in. We sell the pure article, and the adulterated article is let down in price.

1343. Mr. Sheridan.] What proportion of rice do you put to a quarter of wheat?—About 4 lbs.

1344. Mr. Villiers.] What is your dividend under the system you are now pursuing?—It is divided amongst the members in proportion to their purchase.

1345. What does the company pay?—£.5 per cent. upon the capital; and whatever profit is made afterwards is divided amongst the members in proportion to their purchase.

1346. When you mixed alum with the flour, you were not making so large a profit; the dividend was not so large as it is now?—There is no difference in the profit, only in proportion to the amount of business done.

1347. Viscount Goderich.] Under the Friendly Societies Act you were only permitted to deal with your own members?—Under the Friendly Societies Act we were only permitted to deal with our own members. We are taking steps to enrol under the Industrial Provident Societies Act, because we find it impossible to work under the other. I am connected also with a co-operative store in Rochdale.

1348. Chairman.] What articles are supplied from those stores?—We supply almost every article of food.

1349. What was the origin of those co-operative stores?—The origin was to sell a pure article, and to enable the men, we may say, to make a profit for themselves.

1350. Which was the more important of those two elements in operation?—Getting a pure article.

1351. That was the first thing thought of?—Yes.

1352. Do you mean to say that you were purchasing articles of so impure a quality that the working classes thought it necessary to establish stores of their own for the purpose of getting pure articles?—Yes; they knew that by that means they would have a complete control over what they did purchase.

1353. In your opinion there was a general impression on the minds of the public that articles of food were adulterated?—Yes.

1354. Mr. Villiers.] Will you name some of the articles to which you are referring?—Coffee, pepper, tea, and almost every kind of food.

1355. Meat?—Butchers' meat.

1356. Do you apply that observation to all those articles, that they were generally impure before the establishment of your stores?—Yes. I may mention one fact; at first, when that society was established, there was a complaint when they began to sell that the coffee was not so strong as the coffee they had been accustomed to having, and to please one or two parties there was a little sold as coffee and chicory mixed; it was discovered by the members, and as soon as it became known to the members that the committee had agreed to do this thing it was brought before a general meeting and upset; nothing has been sold since which they knew to be adulterated.

1357. When was the complaint made; before the chicory was mixed with the coffee or afterwards?—Before.

1358. You mixed the chicory with the coffee to make the coffee stronger?—To make it stronger; it was only done for a few weeks, and has never been done since.

1359. Did it answer the purpose?—It made it look stronger.

1360. It was like the case of the alum in the bread; they did not like the colour of the coffee?—They did not like the colour of the coffee.

1361. How long did you sell it mixed?—Not above three or four weeks.

1362. Was the mixing profitable?—It was sold at a lower price.

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1363. Viscount *Goderich*.] The members objected to the mixture?—They objected, and they would not allow the adulterated article to be sold in the shop; any resolution passed by a general meeting must be carried out.

1364. Mr. *Villiers*.] Were there any other groceries sold that were not pure?—No.

1365. Did the members remonstrate for the purpose of returning to the original principle for which they were established, to sell a pure article?—Yes.

1366. Without any reference to profit one way or another?—I must say this, that the best articles must be purchased or they will not sell in that shop.

1367. You did not undertake to sell lower than other tradespeople?—No.

1368. Mr. *Gregson*.] Do you sell at cost price?—No; we sell as near the trade price as is possible.

1369. Mr. *Villiers*.] Your observation as to adulteration does not apply to the other things you sell, such as clogs and coals?—No; if inferior articles are sold as the better articles they can tell for themselves.

1370. What led to the selling of those articles?—The profit to be derived from supplying themselves with anything they require.

1371. You do not undertake to serve those articles at a lower price; and there was no complaint of the tradesmen's articles being inferior before your company was established?—They wanted to make a provision for themselves; in fact they want to supply themselves with everything they require.

1372. That was partly the principle of the society, was it not?—That was one; as I said at the beginning, they had a desire to realize the profits of the sale.

1373. Viscount *Goderich*.] They wanted to put in their pockets the profit made upon those articles?—Yes.

1374. Mr. *Gregson*.] Do you make the clogs which you sell?—Yes, they are made on the premises.

1375. *Chairman*.] In point of fact, your society resembles the societies which exist in France; that is, associations of persons in particular trades, who divide amongst themselves the profits of their own work; that is one of the objects of your society?—Yes.

1376. Mr. *Villiers*.] There is no attempt on the part of your society to make all the articles themselves, but you employ people who have been brought up to the business?—Yes.

1377. Mr. *Moffatt*.] You manufacture and divide amongst yourselves the profits which you would otherwise pay to the retailer?—Yes.

1378. Mr. *Villiers*.] How long has this co-operative society existed?—It was established in 1844.

1379. Has it existed as it is now throughout that time?—It has. It has very much increased, and is still on the increase; it has increased nearly 500 members the last 12 months.

1380. Mr. *Moffatt*.] What amount do you turn over annually?—We draw from 1,200 *l.* to 1,400 *l.* a week, from 1,450 heads of families.

1381. Your gross returns are equivalent to about 70,000 *l.*?—Yes.

1382. What profit does that yield?—They pay 5 *l.* per cent. upon the capital invested, and a dividend is then made from what is left in proportion to the amount they purchase; it runs generally to about 1 *s.* in the pound.

1383. Mr. *Villiers*.] What are the shares?—*£*. 1. No member can take less than five, nor more than 100.

1384. Mr. *Gregson*.] What is the amount of your capital?—From 7,000 *l.* to 8,000 *l.*

1385. Viscount *Goderich*.] Are you enrolled?—Yes, under the Industrial Provident Societies Act.

1386. Mr. *Villiers*.] Do you think many working men have shares?—They are all working men; there is only one independent gentleman amongst them, that I know of.

1387. Do not you think tradesmen have some shares in this society?—Not in the town; there may be some little petty shopkeepers outside the town that have shares in it.

1388. Viscount *Goderich*.] Are many of your members employed in factories?—Yes; it is to improve their condition. We allow members who take shares to pay the money in instalments at 3 *s.* 3 *d.* a quarter.

1389. Mr.

1389. Mr. *Wise*.] Do the men take a pride in the society working well?—Yes; they boast much of it.

1390. In your opinion, has it tended to promote moral elevation and to encourage prudence amongst the working classes in the town of Rochdale?—Yes.

1391. Mr. *Moffatt*.] Have most of the shareholders paid up the full amount of their shares?—No, a great many have not. There is a provision at the discretion of the committee by which they can withdraw down to 2 *l.* in cases of distress; I could relate instances where it has actually kept people off the parish.

1392. Then it acts as a savings bank as well as a shop?—Yes.

1393. Viscount *Goderich*.] Has the society existed during periods of distress in the district?—There was 1846, which cannot be forgotten.

1394. You lived through it?—We lived through it with great difficulty.

1395. Mr. *Villiers*.] Looking to the original object of this society, as far as regards the purity of the provisions, they would have no objection to the appointment of public inspectors?—None whatever; they would be glad of it.

1396. Mr. *Gregson*.] Do you sell both by wholesale and retail?—There are two departments, the wholesale and the retail, and that is the reason why some of the small shopkeepers outside the district have joined the society.

1397. Mr. *Sheridan*.] In order to obtain goods for their own shops?—Yes; they get them at the same price as elsewhere, and reap a portion of the profits. The two concerns are kept separate. The dividends are not so large on the wholesale as on the retail trade.

*John Challice*, Esq., M.D., called in; and Examined.

1398. *Chairman*.] YOU are a physician in Bermondsey?—Yes.

1399. You have had some experience in that district upon the subject of adulterations, both as to articles of food as well as medicine?—I have.

1400. Will you be good enough to state to the Committee what is your general impression as to the existence of adulteration, and then perhaps you will give some few instances you may be acquainted with of your own knowledge, and then state the general effect upon the health of your district?—In the first place, as to bread, the most important article of all, I am convinced that adulteration is general, in fact, even the best bakers admit that they use 12 ounces of alum to 140 two-pound loaves; that is a proportion which I am convinced is injurious to the health of all classes, but most especially to the poorer classes, who require pure bread.

1401. Why do you say the poorer classes require pure bread?—Because they take more of it, and because, owing to other physical causes, their stomachs are perhaps more incapable of digesting a mineral than that of others who have pure air and plenty of exercise.

1402. Those 12 ounces of alum are considered the minimum?—That is considered the minimum; when the flour is bad they use double that proportion I understand.

1403. Of course with proportionate injury?—Yes.

1404. It has been stated to the Committee, on the evidence of persons conversant with chemistry, that alum when mixed with bread loses a good deal, if not the whole of its injurious properties; that its astringent properties are destroyed by decomposition, and it exists in a mineral element which is in itself, when separated, quite innocuous?—I do not believe it; burnt alum has a very powerful effect upon the animal economy; when burnt it goes through quite as great a heat as occurs in baking alum in bread.

1405. Is it liable to dissolve in the process of bread making?—It might form afresh, but the base of the alum must remain in the bread.

1406. The alumina?—Yes.

1407. Would you consider the alumina injurious to health?—Undoubtedly.

1408. Mr. *Sheridan*.] You said that bakers admit putting a certain proportion; where did you get that admission?—I got that admission from three large bakers within the last two days, and from one, who is a very large contractor, this morning.

1409. *Chairman*.] What is their object in mixing alum with the flour?—The

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The object is, they state, that it makes the bread of better appearance; my baker, who gave me evidence this morning, is a very practical man; he says, he believes it merely saves trouble, and he is of opinion that bread could be made quite equal, if a little trouble were taken, without the alum; alum was originally substituted for salt when salt was very dear; if an extra portion of salt were used instead of alum, the bread would be quite as good in appearance without the alum as with it.

1410. *Mr. Sheridan.*] That would not be saving trouble; that is another article?—Exactly; at the present moment they use alum to save trouble.

1411. If they used a little more trouble they could produce a better article?—Yes.

1412. Would the additional trouble increase the price?—No; the baker said that on one occasion he used no alum for a time, and the workmen said it was so much more trouble they would not work for him.

1413. *Mr. Gregson.*] Does the proportion of alum you speak of materially affect the taste of the bread?—I do not think it can be detected in the taste; it causes the bread to become dry sooner.

1414. *Mr. Wise.*] If salt is substituted for alum the question of expense cannot arise at this time, as salt is cheaper even now?—No; I believe that salt might be substituted for alum with amazing advantage to the public.

1415. Would it have the same effect in making what is rather yellow bread white?—Yes, the chlorine in the salt would; if there were more salt put in it would, in all probability, make the bread whiter.

1416. Is it not your opinion that the constant use of alum has an effect upon the gums, the teeth, and the mucous membrane of children?—The constant use of alum has the effect especially of creating irritability in the bowels, at one time constipation, and at another time a disposition to diarrhoea and dysentery.

1417. Have you any hesitation in saying that alum is used almost universally in the bread of the metropolis, and is injurious to health?—Yes.

1418. *Mr. Peacocke.*] We have heard that in the process of baking the alum is dissolved to its component parts; do you think that the heat necessary for baking a loaf is sufficient to dissolve it?—I do not think it is.

1419. I apprehend for the purposes of baking it would be about 250 degrees?—Yes.

1420. And it would require something like 400 or 500 degrees to dissolve alum into its component parts?—I do not know that of my own knowledge, but I should say it would.

1421. *Mr. Moffatt.*] At what temperature will alum maintain its crystalline form?—I cannot give a positive answer as to that; I have tasted and seen alum in bread which I have purchased in bakers' shops.

1422. In a crystalline form?—Yes.

1423. Can you give a simple, easy test by which a poor person could find out alum?—It might be done.

1424. Upon macerating the bread, and leaving it in water, it would leave a taste in the water?—Yes.

1425. Have you found anything in bread, besides alum, or have you heard, on good authority, that anything is used besides?—No; at the present moment rice is used very extensively by cheap bakers; the loaf is not so nutritious, I consider. It enables them to sell the loaf nearly a penny the quarter loaf less by the large absorbing power of the rice. I think, of course, that is a fraud upon the purchaser in purchasing a wheaten loaf.

1426. The loaf holds more water?—Yes; I believe a sack of flour, with 40 pounds of rice, will make about 116 quarter loaves, while a sack of pure flour will make only 95.

1427. *Mr. Peacocke.*] Would not the effect of rice, like the effect of potatoes, be that a poor man after having taken a meal of rice would feel more filled out?—It would not digest so soon.

1428. Is there not a disposition on the part of the poor to prefer that sort of diet, just as there was in favour of potatoes, in which there is not the same amount of nutrition as in bread?—

1429. *Chairman.*] What other article do you consider to be very highly adulterated?—As regards beer I have a very strong opinion, not from analysis, but from observing closely the effects of beer upon the working classes; that is particularly

particularly evident when workmen first come to London; they find the London beer produces intoxication, with furious excitement, which they say they never felt from drinking their home brewed beer, ale, or country beer. That excitement is closely analogous to the effect produced on the human system by many narcotics; I will not mention them because I do not think it right to mention them. The workman goes to a public-house where he can drink beer which will make him feel elevated or intoxicated.

1430. Do you believe that very frequently the intoxication is not the product of malt and hops, but is the result of some dangerous chemical compound?—I feel as confident as I can of that as I do of anything that has not been proved to demonstration.

1431. *Mr. Moffatt.*] Have you analysed any beer?—No.

1432. *Mr. Peacocke.*] *Coccus indicus* it would be very difficult to trace in beer, would it not?—Yes.

1433. *Mr. Moffatt.*] Have you experienced yourself those prejudicial effects?—Yes.

1434. *Mr. Peacocke.*] That is the only test by which you could discover the presence of *coccus indicus*?—Yes.

1435. We have been told that there could be no inducement to put *coccus indicus* in it. I apprehend there would be a double inducement: in the first place, if they diluted the beer with water *coccus indicus* would restore the frothing power to the beer?—Yes, it will have that effect. I may state that I attend publicans, and there are many who sell the article exactly as they receive it from the brewer.

1436. *Chairman.*] You believe the brewers' beer is pure?—Yes; I believe there are many publicans who feel compelled to use this contaminating principle.

1437. *Mr. Moffatt.*] Do you believe that contaminating principle to be *coccus indicus*?—I have sometimes suspected it was, and I have had my suspicion that it was tobacco juice.

1438. Does that have a deleterious influence?—It has an intoxicating influence.

1439. *Mr. Peacocke.*] The same as *coccus indicus*?—Probably not so immediately; it is a powerful anodyne.

1440. It would not give it that frothy appearance?—I think not.

1441. *Mr. Moffatt.*] Is there any other ingredient in porter?—I know of no other; but I should express a strong opinion upon that.

1442. Sugar?—Sugar, no doubt, is used, but I would not call that an injurious adulteration, in the same way as mixing rice with bread; I am speaking of adulterations injurious to health.

1443. *Mr. Gregson.*] What kind of narcotics do you allude to?—Probably with a view to publication I had better merely give a general opinion.

1444. *Chairman.*] In point of fact you could not prove it; it is a mere matter of suspicion; but you are quite sure that there is an admixture?—Yes; I have seen instances of a man drinking a pint of beer at a public-house for the first time, and he has been in a complete state of coma.

1445. *Mr. Peacocke.*] Do you mean a man who had been in the habit of drinking water instead of beer?—No, I mean a man who had been accustomed to home brewed beer in the country.

1446. *Chairman.*] Is there any other article upon which you wish to make a remark?—In regard to meat, in poor neighbourhoods it is a matter of notoriety that there is meat exposed to sale, which it is very evident, from the viscera being also exposed at the same time, shewing a mass of disease, that the animal must either have died or have been in a dying state when killed.

1447. Was that in the Borough?—I am speaking of the poorer neighbourhoods in London.

1448. *Mr. Gregson.*] In London generally?—Yes. I have been told of one instance of a butcher who never eats a morsel of meat out of his own shop; he always sends to another butcher for it.

1449. *Chairman.*] Can the poor detect bad meat for themselves?—No; they always buy where it is cheapest.

1450. *Mr. Moffatt.*] Your belief is that the poor are not judges of meat?—They are always perfectly helpless in that respect.

1451. Excepting with regard to odour?—It may be that animal poison cannot be

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be detected by chemistry; we know how subtle it is. I will call the attention of the Committee to the almost universal existence of carbuncle, which is quite a fresh disease in London during the last four or five years. I think it is very probably traceable to the large quantity of diseased meat which is now eaten in London.

1452. Mr. Moffatt.] Has carbuncle much increased amongst the poorer classes?—Yes, and it is more malignant than amongst the better classes.

1453. Chairman.] It also exists amongst the higher classes?—Yes.

1454. If carbuncle exists amongst the higher classes you could hardly trace it to the use of diseased meat?—Possibly not, but I do not think you can be quite sure that you do not yourselves eat it. There is a regular market for diseased food, as for the other classes of food; it is sold generally to the poor, and the poor have no help in the matter.

1455. Mr. Moffatt.] What are the tests by which you would attempt to detect diseased meat?—When I see the lungs a mass of tuberculous matter, and when I see the kidneys decomposed, I have no difficulty in concluding that the meat is diseased.

1456. Taking the meat apart from the viscera, how would you detect diseased meat?—I should imagine that microscopically the fibres of the meat would appear of a different structure.

1457. If two pieces of meat lay upon this table, one diseased and the other not diseased, how would you tell which was diseased?—I think any one might tell.

1458. By what test?—By the consistence; one would be flabby and the other moist.

1459. The diseased meat would be flabby?—Yes.

1460. Is there not at the present moment a law against selling diseased meat?—There is a law, but the punishment seems never to be inflicted. I was, by chance, a short time since, at the Old Bailey, and a man was undergoing his trial for bringing up the carcass of a diseased animal to London, that had been thrown ashore at Erith, out of a vessel, evidently in a frightful state of disease. A butcher at Erith had dressed it on the shore and prepared it for the London market in the presence of all the people in Erith. There happened to be a gentleman there who protested against it. The butcher said it would do for the London people. He brought it up to Leadenhall-market; he was followed by this gentleman, and when the case came to be tried, instead of being treated seriously, it appeared to be made a complete joke of. They laughed about the meat that would be sold to the Londoners, and its being converted into sausages. It seemed a very ludicrous matter to the counsel, and the man was held to have committed no offence because he had not offered it for sale.

1461. Mr. Peacocke.] You said that he took it to Leadenhall-market to deliver it into the hands of the salesman?—Before he delivered it to the salesman he was given into custody.

1462. Are there not inspectors at Leadenhall-market?—There are.

1463. Is it not their business to prevent the sale of unwholesome meat?—It is.

1464. Have you never heard of a conviction?—There are some convictions, but not in proportion to the number of offences.

1465. You say there is a regular trade in diseased meat?—I know there is a regular trade in diseased meat by persons who buy diseased meat to sell to the poorer classes.

1466. Mr. Gregson.] In large quantities?—Yes, they carry on a large trade.

1467. Mr. Moffatt.] And fish in the same way?—Fish is not fresh after a time, so that the poor can protect themselves against buying stale fish.

1468. Mr. Peacocke.] Do not you consider that in the poorer quarters of London adulteration is carried on to a much greater extent than it is in the richer quarters?—Yes, I am sure it is.

1469. Mr. Moffatt.] Have you had the means of testing what are termed the richer parts of London?—No. I am not confined to test. I taste the food I eat. Any one who pays the slightest attention must know that the poorer classes are supplied with articles grossly adulterated. Life is often sacrificed by the adulteration of mustard, for instance.

1470. What is mustard adulterated with?—It is adulterated with flour, which entirely alters its character. If a medical man is called to a child with inflammation

inflammation of the lungs, and he wishes to produce counter-irritation, he orders a mustard plaster; when he calls again he finds the child is worse, probably dying, the plaster not having taken any effect; and because a strong stimulant, as it is supposed, has taken no effect, the parent has probably given up employing other remedies, when, in reality, the mustard plaster has been merely an application of flour and turmeric, with a very small portion of mustard, which produces no effect. I have frequently applied pure mustard, and convinced the parents that there could be effects produced which could not be produced by the application of this flour and turmeric.

1471. Have you had adulterated mustard analysed?—The taste itself will tell you that it is simply flour, coloured with turmeric, with a small portion of mustard, not more than 25 or 30 per cent.; it is known in the trade that there are three or four qualities sold, according to their reduction by flour.

1472. Mr. Peacocke.] Is not mustard known to be adulterated in such proportions that medical men have been in the habit of recommending spirits of turpentine to be sprinkled on the parts required to be affected?—Yes; but mustard is an article which you ought to find in every house, as an article of domestic consumption. I believe I was the first who introduced the application of mustard husks, which are the refuse of the mustard manufactories, and which would, in reality, produce the effect which we want from the pure mustard; it contains the essential oil of mustard; the manufacturers do not wish it known, because it would interfere with the sale of the husks, which are used as manure.

1473. Chairman.] Is there any other article upon which you have any evidence to offer?—Yes; arrowroot, which is sold to the poor, generally speaking, I should say, contains potato powder, about 50 per cent. I know it has been held that potato starch is equally nutritious with arrowroot, but I do not believe it. I do not think it is so easily digested. The potato flour certainly does not hold together so long in suspension as the genuine arrowroot.

1474. Supposing a shopkeeper offered you, on the one hand arrowroot with potato flour, at 1 s. a pound, and on the other pure arrowroot, at 1 s. 3 d.; which should you prefer?—I should buy the pure arrowroot. I have seen this myself: in watching very closely the effects of nutriment upon the poorer classes, when I have recommended them arrowroot, they have said, "We do not like it." It is very nice-looking; potato starch is rather better-looking than the genuine arrowroot; but they generally go to the druggists. I do not think the druggists adulterate the arrowroot, it is the grocers.

1475. Mr. Wise.] It has not the delicate flavour which the arrowroot has?—No; I do not believe it has.

1476. To say the least of it, it is a gross fraud?—Yes.

1477. Mr. Moffatt.] You say that you have found as much as 50 per cent. of potato flour mixed with arrowroot?—I know, from the admission of grocers, that that is the proportion that they mix with it when they sell it at 6 d. per pound; they buy the potato flour at about 2 d.

1478. Mr. Kinnaird.] Did the grocer openly state that to you?—No; I got it confidentially.

1479. Mr. Moffatt.] Would not the mixture be easy to test?—Yes; the crystals are differently shaped; it is very easily tested. If you recommend for the child of a poor person recovering from fever arrowroot with milk, and the child gets potato flour and chalk and water, you are not surprised at the child being starved to death.

1480. Do you mean chalk and water instead of milk?—Yes.

1481. Viscount Goderich.] You said that the presence of potato flour in arrowroot was very easy to test; I presume you mean by scientific persons, but not by other persons?—Yes.

1482. Chairman.] What is your experience with regard to milk?—My experience is, that three kinds of milk are openly sold.

1483. What are they?—Twopence, threepence, and fourpence a quart.

1484. Mr. Moffatt.] What is the difference of quality?—The difference is made up by water and by chalk.

1485. Are each of those milks of equal freshness?—I do not know as to that. Some few years since I was chairman of the Board of Guardians of Bermondsey, and our contract for milk, there being from 200 to 300 children, was large. The terms of the contract were, pure milk at so much per barn gallon. A man

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from Essex tendered to supply us at 5  $\frac{1}{2}$  d. a gallon, and there was a tender from another man at 1 s. a gallon. The tender of the one at 5  $\frac{1}{2}$  d. a gallon was taken, and it was soon found that it was anything but what it pretended to be. All the milk was adulterated; it turned sour, and was altogether bad milk. We then accepted the contract of the man at 1 s. a gallon, reducing the milk 100 per cent. After putting an equal quantity of water to the milk, we found it better milk, more satisfying to the children, and more nutritious than that which was supplied at 5  $\frac{1}{2}$  d. One of the witnesses has said before that which I can readily imagine to be the case, that working men do not like to point out these things; neither does a professional man, because he makes many enemies. This contractor for the supply of milk ought to be exposed and punished.

1486. Mr. Peacocke.] Did you analyse the milk?—No; it was found that there was a great sediment, which established that there was chalk and a large quantity of water.

1487. Was there anything else?—No.

1488. Mr. Moffatt.] What price had you paid previously for milk at Bermondsey?—From 8 d. to 9 d. a gallon.

1489. Was it pure milk which you obtained at 9 d. a gallon?—I am not prepared to say.

1490. Was it pure milk which you obtained at 1 s. a gallon?—Yes.

1491. As tested by the lactometer?—Yes.

1492. How long did you take this milk at 5  $\frac{1}{2}$  d.?—About a month before there was a report from the master that it was very bad milk.

1493. With that great difference of price, did it not occur to the Board of Guardians to test this milk before it was received?—The guardians think that they are trustees of the people's money; the man gave the contract, and I do not blame the guardians for accepting it.

1494. The guardians do not think that they have any responsibility to see that the things supplied are pure?—I say they do; directly the master reported that it was bad milk it was discontinued.

1495. Mr. Kinnaird.] What would be the effect upon a young child of taking a quantity of this chalk mixture?—It would in all probability, if it were a child of feeble digestion, block up the intestines, and kill the child; chalk is very insoluble, and soon settles down.

1496. Mr. Moffatt.] Did you say that chalk was found in the milk?—I must correct myself; it was not tested or analysed; there was a deposit found.

1497. Mr. Peacocke.] I apprehend it is not the duty of the Board of Guardians to inquire into the food supplied, but rather the duty of the master of the poor-house?—It is the duty of the Board of Guardians to inspect the food.

1498. Chairman.] Have you any evidence to give with respect to any other article?—Wine. Wine is an absolute necessary for the poor when they are recovering from sickness; they have no means of getting pure wine; the adulteration of it is fearful. I have seen many instances in which, when I have recommended port wine, and it has been procured at public-houses, instead of acting as a wholesome stimulant and a restorative astringent, it has produced pain, acidity, griping, irritation and mischief, instead of good. It is a matter of notoriety, I believe, that a composition is sold as a substitute for port wine.

1499. Mr. Moffatt.] What is that composition?—I believe the astringency imparted to the liquid is by alum; I believe there to be an infusion of logwood; I believe there to be sloe-juice and sugar; it is a chemical combination entirely different from port wine.

1500. Have you tasted it?—Yes, and I do not like it.

1501. Does it taste like port wine?—No; I like a glass of port wine, and I wish the poor could have it; the taste is sufficient to deceive a poor person; the poor have a great craving for wine; they believe it is a luxury that will restore them to health.

1502. Have you found any other sort of wine adulterated?—I believe sherry is manufactured out of brandy.

1503. Is it brandy and water?—Brandy and water, flavoured probably with some bitter almonds, or something of that kind.

1504. There is nothing, so far as your experience goes, of a prejudicial character in the manufacture of sherry?—No.

1505. In

1505. In the port wine you found adulterated, you believed there was something prejudicial to the health of the person who took it?—Yes, it does harm instead of good. I think there is a good opportunity, by means of Sir Benjamin Hall's Metropolitan Management Bill, that the vestries might have power invested in them by means of their inspectors of nuisances to detect adulteration. I think it would do away with the objections made by some persons to centralization and so on. There is a local Board in our parish who could have the control and punishment of those matters. I would suggest that a large fine should be inflicted upon the first conviction, to be quadrupled upon the second conviction.

1506. Mr. Wise.] So as to make it a kind of semi-municipal sanitary arrangement?—Exactly; I am convinced that that might be done without much difficulty.

1507. Mr. Peacocke.] Is there a strong feeling amongst the poor people of Bermondsey on the subject of adulteration?—I think they are helpless in the matter; I think they require to be protected.

1508. You said just now that no poor person had ever taken up a case?—I did not say that; I said there was a general reluctance amongst all classes to make themselves the advocates or criers-down of any custom that was prevailing.

1509. You said that they did not like to place themselves in an invidious position?—They would be making themselves public prosecutors.

1510. Do you think the sympathies of the shopkeepers generally would be with the person showing up the fraud or the convicted adulterator?—I do not wish to be held out as a libeller of persons who keep shops, but I am afraid there is a very low tone of feeling upon that subject.

1511. Under those circumstances, if it was a question for a jury, for instance, there might be very considerable difficulty in obtaining convictions?—No; I think the vestries who have been elected under the new Act of Sir Benjamin Hall, as a class of men, are intelligent, independent men. I do not see why the evidence might not be made so clear that the jury must convict. If a law were passed against putting alum into bread, and making it an offence, and if evidence were brought clearly that there was a loaf purchased at a baker's shop, and it contained so much alum, a conviction must be easy enough.

1512. Mr. Gregson.] You have recommended inspectors of nuisances to be employed; do you think they are capable of detecting these adulterations?—No, but the sanitary officers under the Board would; the inspector of nuisances would bring the fact; he might be so far educated as to be satisfied, for instance, that there was meat exposed for sale which was unfit for human food, and that bread was bad; he would be the person to bring the information to the sanitary officer, and then the two combined would form a very good executive for checking adulteration.

1513. Viscount Goderich.] Are you aware that the inspector of nuisances has the power of condemning bad meat under the Nuisances Removal Act of last year?—Yes, but they are not well aware of that; it has not been pointed out to them strongly enough. I really must guard myself against it being at all implied, which probably the tenor of my evidence might lead to, that there is more adulteration of food in Bermondsey or Southwark than in other parts of the Metropolis.

1514. Mr. Kinnaird.] Does not adulteration exist in all the districts which are chiefly inhabited by working people?—Yes. Bermondsey is like a large manufacturing town. There are large manufactories carried on there; they are not so poor as they might seem to be.

1515. Mr. Gregson.] Your remarks apply generally to London, do they not?—Yes.

1516. And to the provinces?—I cannot speak from my own knowledge with regard to the provinces.

1517. Mr. Kinnaird.] Is there any easy test which you can suggest for finding out whether port wine is adulterated or not?—A practical chemist would point out a proper and easy test in 10 minutes.

1518. Mr. Moffatt.] Are there any other articles of food largely adulterated in your opinion?—I think I have mentioned bread, beer, meat, mustard, arrowroot; tea, generally speaking, is pretty good.

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1519. Is coffee adulterated?—It has been enormously adulterated with chicory, and not always with chicory.

1520. Have you found coffee mixed with other ingredients?—Yes.

1521. What other ingredients?—I know an instance in which a drug-grinder was grinding some two tons of something which purported to be chicory. He complained himself, and said, "This is not chicory." Other vegetable roots seem to have been dug up and dried, and mixed at a period when there was a great demand for chicory, and sold as chicory.

1522. Is chicory usually ground by drug-grinders?—The grocers, I believe, have it ground.

1523. Do you know of your own knowledge, any instance of chicory having been ground by a drug-grinder, or is it a matter of hearsay merely?—No. When I called the person I referred to a drug-grinder, he is not by profession or trade a drug-grinder, but he has machinery on his premises, and he occasionally does it.

1524. You are aware how chicory is roasted in the solid?—Yes.

1525. Are you aware whether it is ground simultaneously with coffee or not, when it is intended to be sold with the coffee?—I am not aware of that.

1526. Mr. Wise.] When you said that other ingredients were used in the adulteration of coffee, did you mean to allude to parsnips or acorns, or roasted corn?—Yes.

1527. Have they been used to any extent in the metropolis?—I cannot speak to that.

1528. Other vegetables have been dried and ground up?—Yes.

1529. Mr. Moffatt.] Have you found any adulteration in sugar?—No.

1530. In spirits have you found any foreign matters?—I believe them to be largely adulterated; the substitution of British for foreign brandy is an acknowledged fact.

1531. Is that more prejudicial to health than foreign brandy?—Yes.

1532. For what reason?—It is a strong rank spirit.

1533. How do you define a strong rank spirit in reference to British brandy?—I cannot give an exact definition of it.

1534. Are there any other ingredients mixed with British brandy, so far as your experience goes?—No.

1535. You have not analysed or tested the relative qualities or properties of British and foreign brandies?—I have not.

1536. Chairman.] Can you give the Committee any information with regard to drugs?—It is the fact, that as soon as any article comes into general consumption, (I will illustrate that observation by cod-liver oil,) something else is sold for it, so that any one who has to do with drugs is compelled to be very particular as to whom he deals with. There is a general complaint I know at the hospitals, that cod-liver oil has not so good an effect as it had at first. There is scarcely the means of detecting it, but it is adulterated by the admixture of other fish oils with it.

1537. Do you believe that adulteration prevails largely in medical preparations?—I would rather use the word substitution; substituting a cheap drug of the same class for an expensive one. It is well known with respect to scammony, which is an expensive purgative, that there is a great deal of difficulty in getting pure scammony. I need not point out instances in which a person's life might depend upon the prescriptions which are written and sent to a chemist being made up with drugs of a pure quality.

1538. Mr. Wise.] The consequence is, that medical men are frequently disappointed in the effect produced by the medicines?—Very frequently.

1539. Mr. Moffatt.] Has that occurred in your own experience?—Frequently.

1540. And when you have ordered the drugs from some other chemist, the effect required could be obtained?—Very frequently; there are druggists who get 25 or 30 per cent. increased price from having the character of selling good drugs.

1541. Mr. Peacocke.] Are the drugs sold at Apothecaries' Hall pure?—Yes.

1542. Mr. Moffatt.] And those sold at many other places?—Yes.

1543. Mr. Wise.] Have not the Apothecaries' Company the power to visit and inspect the apothecaries of London?—Yes.

1544. Do

1544. Do they do so from time to time?—No; it has fallen into disuse.

1545. Chairman.] In speaking of these adulterations, you mean to say that there are a large number of persons who sell pure medical compounds and pure drugs, and such persons would naturally have no objection to an inspection of their articles?—They could have none.

1546. Therefore an inspection would be found beneficial?—I think the power of inspection alone would be of great use.

1547. Do you think that there is such an amount of adulteration carried on amongst the poorer dealers in drugs and medicines as would justify some such measure for preventing an existing evil?—It is generally known that the articles most used amongst the poor are very much adulterated.

1548. The richer classes, who can resort to the higher classes of retail druggists, are comparatively safe, while the poor are quite unprotected upon that point?—Yes.

1549. Mr. Wise.] Are you aware that in France all chemists and druggists are required to be licensed?—I believe that is the case.

1550. How would that system work in this country?—I am of opinion that every trade ought to be licensed, which might be done by a mere registration of these local municipalities; there would be no centralization and no interference with free trade; and if they were convicted of great social crimes, such as the adulteration of food or the substitution of one article for another, probably for a third offence they should be unlicensed and not allowed to carry on the trade again.

1551. Might not some mischief be prevented by the supervision of some skilled person over drugs?—Yes.

1552. Is it not the case that a great many drugs which come to this country are adulterated elsewhere?—No doubt. I believe the Chinese are very celebrated for adulteration. Some time since it was stated that some nitrate of potass was coated very cleverly with camphor, the one being an expensive article and the other cheap.

1553. Is it not notorious that opium is very much adulterated in the countries where it is made?—Yes.

1554. Mr. Moffatt.] Would you propose to establish inspectors at the various ports of importation of those drugs?—I think it is a matter of public and almost national importance. I am not suggesting a remedy; if you leave it entirely to an inspector, probably the man might be bribed.

1555. Assuming that he was not bribed, if you could find a pure inspector who was above taking a bribe, he must be a person well qualified to distinguish whether there was purity or impurity in the drugs?—You would have to educate that class of men.

1556. Having educated those men you set them to work, and the first article they come to we will assume to be wholesome, but with probably 12 per cent. of impurity; for example, opium, how would you deal with that?—If it were not another article substituted it would be imported or sold as such.

1557. It has been stated before this Committee that there are great variations in the opium imported into this country, varying from 12 to 2 per cent. of other matters, but still it is imported as opium; how would you deal with that article; would you refuse its introduction into this country?—No, I should think it very unwise to do so.

1558. Assuming that there was two per cent. of impurity in the article, would you take it as a pure article?—I suppose absolute purity you cannot meet with in anything.

1559. Assuming that you had inspectors, where are they to draw the line as to what they shall receive and what refuse?—It is a difficult thing, which may be met, in a great measure.

1560. Chairman.] Have you devoted your attention to the question of remedies?—No, I have not.

1561. Are you aware that a law exists in the United States appointing inspectors?—No.

1562. Mr. Moffatt.] Therefore you are not aware that that law in the United States is very ineffective?—I know that the Americans have credit for being very clever in evading laws.

1563. Mr. Wise.] You think, with regard to drugs, that the public ought

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to be supplied with the drugs which they ask for, and not something else?—Yes.

1564. You would make it a fraud, and subject to punishment?—Yes; I believe if the penalty were more frequent and more severe, the public would begin to look upon the adulteration of drugs more as a crime.

1565. *Chairman.*] Without saying what the machinery should be, you have no doubt that the Legislature should contrive some means of preventing these adulterations?—I have no doubt of it.

1566. *Mr. Moffatt.*] Have you given your opinions with regard to the adulterations which affect general health, or to adulterations which are prejudicial or non-prejudicial to public health?—I am speaking of the adulterations affecting public health.

1567. You confine your opinions to them?—Yes; I think manufacturers can take care of themselves pretty well. With regard to that, I am not expressing an opinion upon the necessity for legislative interference, but I believe the public require protection.

*Mr. Rufus Usher, called in; and Examined.*

*Mr. R. Usher.*

1568. *Chairman.*] YOU are a grower of English rhubarb?—Yes.

1569. Your place is at Boddicott, near Banbury?—Yes.

1570. When was English rhubarb first grown?—In 1789; it was introduced by Mr. Hayward, of Banbury; it was recognised by the Society of Arts at the time, and they awarded him a silver and gold medal.

1571. Has it been used as a medicine from that time to the present?—Yes; but not extensively till 1811, on the death of Mr. Hayward, when the plants were purchased by my father, Peter Usher.

1572. Where were those plants then grown?—At Banbury.

1573. *Mr. Kinnaird.*] Is it an expensive culture?—It is expensive, owing to the length of time it requires to remain in the ground; from four to five years.

1574. *Chairman.*] It is a different article from the ordinary garden rhubarb?—Yes; a different species, or a variety.

1575. *Mr. Wise.*] The sticks are not consumed by the public in making puddings and tarts?—Not now; because it has been found when pulled for such consumption to rob the root of its medicinal properties.

1576. Are the sticks of the same character?—Smaller.

1577. *Chairman.*] Will you be good enough to favour the Committee with any evidence which you may possess as to the medical effect of English rhubarb?—I will give, in the first instance, the opinion of Dr. Pereira, extracted from his *Materia Medica*; he was a very eminent man: "For several years past English rhubarb has been exclusively employed at the London Hospital, and no complaints have been made respecting its operation." "From experiments made by Dr. Parry at the Bath Hospital, it appears that the purgative qualities of English rhubarb are scarcely so strong as those of the Russian and Chinese varieties, but the difference is not great." "All the different commercial sorts of rhubarb contain the same constituents, but in different proportions; hence the differential characteristics are founded on relative or comparative differences, not on absolute ones." "English rhubarb contains a smaller quantity of oxalate of lime, and a larger quantity of starch." "In some specimens of English rhubarb I have met with crystals of oxalate of lime in as great abundance as in foreign rhubarb." "Some specimens of Russian rhubarb contain so much starch that they react on iodine like those of English rhubarb."

1578. I will not ask you to go through the evidence of other gentlemen who have given a like opinion; will you enumerate the names of any three or four principal ones, merely to show that they concur in the main with Dr. Pereira's testimony?—The testimonials which I wish to place before the Committee are very short. I have received this letter from Dr. Tustin, who is the dispenser at the London Hospital, and acted with Dr. Pereira. The letter is dated "London Hospital, February 26th, 1856. My dear Sir,—I was just about to write to you when your letter arrived. After considering the matter over, I do not believe that any statement I might be able to make before the Committee of

of the House of Commons would avail you much. I should not feel justified in making any statement as to the composition of the various rhubarbs you have supplied us with; that would be the peculiar province of Dr. Letheby, the analytical chemist of the hospital. I can, however, state that some years ago I had the honour of conducting a series of experiments for my friend Dr. Pereira, in order to ascertain the purgative qualities of English rhubarb, and we then came to the conclusion that it was about two-thirds the strength of the best rhubarb that could be procured. Since then, and lately, I have had ample opportunity of coming to the same conclusion. I have used nothing but English rhubarb in this hospital for these 13 years, and have paid from 36 s. to 50 s. for it. You are at liberty to make any use of this letter you think proper, and I shall be happy to make the statements therein contained before the Committee of the House of Commons, if it be deemed necessary, and any assistance I can afford you in the matter I shall be happy to give. I am, dear Sir, yours truly, *T. H. Tustin*, Dispenser, London Hospital." I have also received a letter from Mr. Redwood, dated "March 3d, 1856. Dear Sir,—I have examined the samples of English rhubarb which you were good enough to send me, and have compared them with the samples in our museum, of which we have several that were obtained when the late Dr. Pereira was engaged in the investigation of English rhubarb. The specimen I have just received from you is better than any I had previously seen, and in regard to those characters by which the quality of rhubarb is usually judged of, is but little inferior to good Indian or Russian rhubarb. I am glad to find evidence in these three samples of improvement in the production of indigenous medicinal rhubarb, from which it may be expected that the produce of our own soil will ultimately compete in quality, as well as price, with that for which we are now dependent upon foreign nations. Although the English rhubarb hitherto produced appears from the evidence of medical men who have tried it to be less powerful than the best foreign rhubarb, yet it certainly is better than much of the inferior foreign which is often imported, and if it should obtain a more extensive trial by medical men a stimulus would thus be given to further improvements in the cultivation of the plant, and the preparation of the root for medicinal use. Yours truly, *T. Redwood*." I have also an extract from Dr. Thompson's *London Dispensatory*, 1837, which is a great authority I believe. After a description of the plant *rheum palmatum*, he says, "This plant has been generally believed to be the species which yields the foreign rhubarb, and under this belief a very excellent and correct description of it was given by Dr. Hope, Professor of Botany at Edinburgh, in the *Philosophical Transactions* for 1765. He had raised it from seed sent to him by Dr. Mounsey, from Petersburg, two years before, and found that the root possessed the medicinal qualities of the best foreign rhubarb. Since that period many laudable attempts have been made to introduce the cultivation of rhubarb into this country in sufficient quantity to supply our domestic consumption of this valuable drug, but although many individuals have reared large quantities, and some of it has been extremely good, yet so powerful is prejudice that very little of it can be sold, and the efforts therefore of the cultivators have of late very much relaxed."

1579. It appears from the testimony of those gentlemen that English rhubarb is a valuable medicament?—Yes.

1580. Can you state to the Committee, of your own knowledge, any particulars as to the difference between English rhubarb and foreign rhubarb?—Not from my practical experience.

1581. What is the difference in the price of English rhubarb as compared with foreign rhubarb?—The price fluctuates very considerably; but the price of English is measured by the price of foreign; it rises in a corresponding ratio with foreign.

1582. What is the price of the best English rhubarb, and what is the price of the best foreign rhubarb?—The price of the best English rhubarb is 2 s. per pound, and the price of foreign, for 1855, was 3 s. 3 d. to 7 s.

1583. Is there any English rhubarb sold at a lower price?—As low as 4 d.

1584. *Mr. Sheridan.*] For medicine?—For medicine. I should be glad to refer to the general condition and quality of a large proportion of foreign rhubarb, as it appears necessary to erect a standard by which to judge of the comparative merits

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merits of English rhubarb. I have the prices here for a series of years, from the "Commercial Reporter Price Current," Office, Mincing-lane. It may not be generally known that foreign rhubarb was sold at ruinous prices, owing to its defective quality. "In 1846, there was a large supply of very inferior and bastard kind of rhubarb, which was sold as follows: old and bastard, at  $\frac{1}{2}$  d. to  $1\frac{1}{2}$  d.; old brown and rotten, 1 d. to 4 d.; prices for better sorts were 8 d. to 1 s. 9 d.; 1847, 7 d. to 3 s., duty free; rotten and damaged, 3 d. to 5 d.; brown, old and perished, 1 d. to 6 d. Notwithstanding the bad quality in these two years the market was cleared by the wholesale druggists."

1585. Mr. Kinnaird.] Do you suppose these low qualities stated there had lost their medicinal effect?—Yes, either by lapse of time, or more probably by not being properly cured.

1586. They had so done?—Yes; admitting the fact, which Dr. Pereira and other individuals, highly qualified, have stated that English rhubarb is equal to the best foreign by two-thirds, it becomes a question whether, including the worst and the best foreign rhubarb, English has not a greater uniformity of character, and is nearly equal in strength.

1587. Chairman.] Without going into the question of the relative merits of the two, the point I wish to put to you is this; if it be represented to the Committee that English rhubarb is sold as an adulterating article, and is of a very inferior quality to foreign, that is a mistake, for medical men attribute very important medical qualities to English rhubarb, and it is consumed in some important public establishments, and is held by very high medical testimony to be exceedingly useful as to medicine?—That is the fact; I think Dr. Pereira's evidence will be almost sufficient to prove that. The objections I have to Mr. Warrington's evidence, and Mr. Herring's, I have noted here, if the Committee would allow me to read them. My objections to Mr. Warrington's evidence are these, that in setting up the prices of foreign and English rhubarb as a test of their intrinsic value, he has taken the maximum price of foreign and the minimum price of English; and has also made a still greater apparent contrast by taking the wholesale price of one and the retail price of the other. If price is to be received as a proof of the intrinsic qualities of these articles, much will depend on the correction of these errors. Mr. Warrington quoted 11 s. 6 d. per pound as the price of the best Russian, and 4 d. per pound as the price of English. In the year 1855 the wholesale price of foreign rhubarb, as entered at the "Price Current" Office, was from 3 s. 3 d. to 7 s. per pound, and the prices of English ranged from 4 d. to 2 s. per pound. This, however, is a greater disparity in price than usual, for it sometimes happens that the minimum price of foreign is below that of English. Mr. Herring stated as follows: "If rhubarb were sold at 8 s. per pound in the lump, but when powdered it could be had for 4 s., the public must know there was an adulteration, or it could not be sold at so low a price." In reply to this statement, I believe if the public were informed that the price and quality of foreign rhubarb vary as widely as any other article of commerce, it will not be difficult to discover how this could take place without an act of adulteration. It would only be necessary to use an inferior with a superior sample of the same article. Mr. Herring quotes English rhubarb at 40 s. per cwt.; I have recent entries of English rhubarb at upwards of ten guineas per cwt. Then as to the wholesale charge made by Mr. Herring on the character of English rhubarb, namely, "that it produces no good effect whatever," I most confidently, in reply, submit to this Committee the opinion of that most eminent physician Dr. Pereira, and of the other highly qualified individuals whose testimonials I have produced on this occasion.

1588. Mr. Wise.] When did Dr. Pereira give that opinion?—During the time he was assistant physician to the London Hospital.

1589. During what year?—I cannot say.

1590. Was that some years ago?—Some few years ago.

1591. Chairman.] The London Hospital continues to use the English rhubarb?—Yes, it does.

1592. Up to the last Dr. Pereira adhered to that opinion, and his practice at the London Hospital is continued by his sanction?—It is English rhubarb that has been used exclusively at the London Hospital for 13 years, by the express sanction of Dr. Pereira; it was introduced, I believe, during the time he was their assistant physician.

1593. Mr.

1593. Mr. Wise.] Is the consumption of English rhubarb increasing?—  
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1594. Mr. Kinnaird.] Are you the only grower in the neighbourhood of Banbury?—I know of but one other grower; I believe there is no other European rhubarb produced but by myself and another person, who also resides near Banbury.

1595. Is your soil particularly suited, or is it capable of being grown as in other parts of the country?—The soil is particularly suited for its cultivation.

1596. Chairman.] You have been careful in the selection of your plants?—There has never been any change since Mr. Hayward introduced it.

1597. Mr. Sheridan.] Is any of this English rhubarb sold for foreign rhubarb?—I am not aware; I know many houses where English rhubarb is sold as English rhubarb.

Mr. Richard Gay, called in; and Examined.

1598. Chairman.] I BELIEVE you are the Superintendent of the Mustard Department in Her Majesty's Victualling Yard at Deptford?—Yes.

1599. How long have you been in that situation?—About 18 months; I have been there since the erection of the machinery.

1600. What was your occupation previously to entering upon the service of the Victualling Yard?—I was a mustard and chicory manufacturer, and drug and spice grinder.

1601. Were you a master or journeyman?—I have been both; I was a master manufacturer for myself about seven years, until my place was burnt down; I have partly had the contract with the Government for mustard, and I suggested to the authorities the propriety of erecting machinery; I offered my services and was accepted.

1602. Why did the Government establish a mustard manufactory?—In consequence of the impurity of the mustard, as well as other things.

1603. They found a difficulty in purchasing pure mustard?—They found it almost impossible to do so.

1604. Will you now be good enough to state to the Committee your experience as to the existence or non-existence of adulteration in the various leading articles which came under your own notice, when you were in trade as a drug-grinder?—I think it is almost impossible to procure pure mustard. I have some samples of pure mustard with me. I do not know anything more easy of detection than adulterated mustard; but still it is almost impossible to obtain it pure. I believe it has been tried. I know I have tried it myself, and a gentleman connected with me spent a great deal of money to introduce the genuine article, but the brown mustard flour, after being mixed about 24 hours, becomes black, and people do not like to see it; they like to see the mustard of a nice bright yellow appearance, and to keep so for two or three days after it is mixed; they think it is not mustard when it turns black, whereas in fact it is.

1605. Therefore the adulteration is intended to meet the public taste as to colour?—As far as colour is concerned; I think, generally speaking, it is done to cheapen the article and to get a greater profit. Mustard seed is very dear. Brown mustard seed is worth from 20 s. to 25 s. a bushel; it will only produce 25 lbs. of flour to the bushel, and there is a great deal of mustard selling at 4 d. a pound.

1606. Mr. Sheridan.] Does this mustard, after it has become discoloured, lose its pungency?—No, not for some days.

1607. Chairman.] What are the articles used for the adulteration of mustard?—The colouring matter is invariably turmeric. I believe that the bi-chromate of potass has been used. I have been so informed, but I never used it, and never saw any used; but turmeric is the thing generally used.

1608. In large quantities?—No, turmeric is not used in large quantities; about 8 lbs of turmeric to about 280 lbs. of flour.

1609. Mustard flour?—No.

1610. What was the adulteration of mustard, as practised in the trade, of your own knowledge?—I believe very few scruple to use wheaten flour, turmeric, and cayenne pepper; the adulterate I used was flour, turmeric, cayenne pepper, and ginger.

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1611. What proportions did those bear to the genuine mustard?—For the best mustard about 25 per cent.; for the commonest nearly cent. per cent.

1612. Mr. *Sheridan*.] Was the cayenne pepper pure which you used?—Yes, we ground it ourselves.

1613. Mr. *Gregson*.] Is turmeric in any way prejudicial?—I do not think it is; I never heard that it was; but farina is also used, and potato starch is used to a very great extent; and now, I am sorry to say, what one of the witnesses called terra alba, or plaster of Paris. I have had some samples in my office in the mustard department, since I have been in my present situation, from which I have extracted five ounces of gypsum in 1 lb.; from another sample I got five ounces of rice and wheaten flour; and from another I got about six ounces of wheaten flour. Those are the mustards which have been taken in contract.

1614. *Chairman*.] Are you speaking of mustards which have been sent in by contractors to the Government?—I should suppose so, inasmuch as they have been returned as unfit for the service, and I have analysed them.

1615. They have been sent from on board ship?—They have been returned from various ships.

1616. Mr. *Sheridan*.] In the case of the adulteration of five ounces of gypsum to the pound, what was the amount of the contract?—I do not know; it was before I came there.

1617. Mr. *Kinnaird*.] As I understand you, the worst sample of adulteration was five ounces of gypsum in the pound of mustard?—That was the worst sample that has come under my notice since I have been there; I have seen worse samples than that; I have seen more than 50 per cent. of gypsum in mustard.

1618. *Chairman*.] Is it possible that any of these samples may represent mustard purchased for the ships on foreign stations?—I think not, because they were in the Government packages; some of them bore the names of the contractors. Of course I do not wish to give any names.

1619. Mr. *Moffatt*.] You state that you found in some of the samples 50 per cent. of gypsum?—The case of five ounces of gypsum to the pound was the worst sample that I have found since I have been in my present situation; but previously to that time I have found samples of mustard not sent in to the Government bearing 50 per cent. of adulteration.

1620. Mr. *Wise*.] Were the parties ascertained?—No. If it had been ascertained, the man would have been severely fined; I never said who it was; I was asked to do so, but I did not do it.

1621. If persons employed by the Government have facts made known to them, that things supplied are adulterated, is it not the duty of those parties to communicate those facts to the Government?—I should say it was. This mustard had been in store three or four years, and sent away; it had been sent to the Isle of Ascension, and had come back. The remedy is now procured, we manufacture our own.

1622. The Government found it necessary to do so?—Yes; I believe that is why they erected the mustard mills.

1623. Have you any other charge besides mustard?—I have not at present; I expected before now we should have been manufacturing vinegar. (*The Witness produced a sample of pure mustard*.)

1624. Mr. *Sheridan*.] Is the mustard issued to the Royal Navy perfectly pure?—Yes.

1625. Will its pungency be lost after a time?—If it were to remain in paper it would. We put it in tin canisters hermetically sealed. I will guarantee that it will keep good for any time. There is a test of adulteration in mustard by which every householder, in one instant, can detect adulterated mustard.

1626. Mr. *Wise*.] What is that test called?—Ammonia.

1627. What quantity of ammonia to what quantity of mustard?—A very small quantity will be sufficient, and it turns the adulterated mustard red.

1628. Mr. *Kinnaird*.] Has it any effect upon real mustard?—Ammonia turns turmeric red. We never expect to find turmeric in pure mustard. If turmeric is put into mustard it is to give colour to the adulterate. If we detect turmeric in mustard suspicion says there is something else, and then we have to try other means to detect what that is. I am not an analytical chemist, but I know enough of my own trade to discover anything of that sort.

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1629. Mr. *Wise*.] If there be turmeric there is generally flour?—Yes. That is a parcel of stuff weighing five ounces which I took out of one pound. I conceive it to be rice flour (*producing the same*).

1630. Mr. *Kinnaird*.] You have extracted the mustard, and this is the residue?—Yes. There is no question about there being gypsum in it.

1631. *Chairman*.] Are the Committee to understand you to say that there were five ounces of gypsum, or that there were five ounces of some compound of which gypsum formed a part?—I did not sufficiently analyse it to detect it, but I concluded the whole of it was gypsum. I believe that mixture which I have now produced to be rice flour. I have samples of mustard upon which I will show the Committee the effect of the test. You will see that the ammonia will have no effect whatever upon pure mustard. I wish this fact to be known, because it is a most easy test (*pouring some ammonia upon a sample of pure mustard*). If I pour some ammonia upon this adulterated sample, the Committee will see that it will turn red instantly. This sample would contain about six ounces to the pound of adulteration. I should say the greater portion of it is gypsum, there is no question about that. A great many people will prefer the adulterated mixture to mine because it looks better.

1632. Is not French mustard rather dark?—French mustard is rather dark.

1633. Mr. *Kinnaird*.] Do you believe good mustard to be a wholesome thing?—I believe it is wholesome. Mustard is a very curious thing; there is as much essential oil in the refuse of the mustard as there is in the mustard flour. I believe it is almost known only to myself; lately I have discovered the fact by getting the essential oil and grinding it with gypsum and turmeric upon the edge stones. I defy any one to tell it from the finest mustard that can be made.

1634. *Chairman*.] You cannot tell it from the flavour?—No. If you were to put a little of this essential oil in water (except that it is more glutinous in water) and mix it with any tasteless farina, and if you were to shut your eyes and taste some you would not know it from the finest mustard.

1635. Mr. *Kinnaird*.] Has it all the properties of mustard?—Yes. I was glad to hear the medical gentleman who was examined express his opinion that it could be procured; the mustard-makers say that it cannot be procured.

1636. How did you get that essential oil?—After many years' trial at it I succeeded in bringing it to perfection from the refuse of brown mustard.

1637. Mr. *Sheridan*.] Is not that a discovery which is likely to lead to additional adulteration?—I do not know that it will.

1638. *Chairman*.] Did you say that the essential oil of mustard would produce, if mixed with flour in the way you state, a blister equivalent to that produced by pure mustard?—Yes. I believe there are a great many people who adulterate in self-defence, and who would be very glad if something could be done to prevent it. I have heard it suggested to-day that some inspectors should be appointed to entirely put a stop to it. I believe many honest tradesmen would be glad to have done with adulteration, but in self-defence they must do it.

1639. Mr. *Wise*.] You think the honest tradesman as well as the public requires to be protected?—I know it from experience.

1640. *Chairman*.] Is there any other article the adulteration of which you can speak to from your own knowledge?—I have heard something about chicory being adulterated. When chicory was worth about 30 l. a ton in the raw state, and 20 l. duty upon it, then it was more worth the while of manufacturers to adulterate. Now English chicory can be bought for about 10 l. a ton, there is very little adulteration, with the exception of Venetian red and treacle, and that is done to give it a brighter colour, more than for the purpose of increasing the weight, though it does increase the weight, and I believe it is very injurious to the article. I remember one year when chicory was worth 21 l. a ton, manufacturing 700 tons of carrots into chicory. They were grown by one gentleman in Surrey, and supplied to the house where I was, and 350 tons of parsnips.

1641. All that was sold for chicory?—It was used to adulterate and cheapen the chicory.

1642. Mr. *Sheridan*.] What did you pay for the parsnips?—Twenty shillings a ton; they cost us 20 l. a ton cutting and drying. When the white carrots  
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were cut up, they looked like chicory; the chicory root is very much like a white carrot.—(*The Witness produced a sample of chicory.*)

1643. Mr. Kinnaird.] Is there any other article of food in the Victualling Department of Deptford which the Government have found grossly adulterated?—I have heard them complain, but they have some very clever gentlemen with instruments to detect those things. They have some serious thoughts of manufacturing vinegar. There are some adulterations which I believe it utterly impossible to detect. I could mention many instances of adulterations of drugs, spices, and mustard, that no analytical chemist could detect even with the microscope; he could not detect charlock seed mixed with mustard seed. When mustard seed is worth 20s. a bushel, and charlock about 6s. or 8s. a bushel, it is worth buying. When mustard is worth about 7s. or 8s., charlock is not worth buying. When they are mixed, no man can tell whether it is mustard or charlock flour.

1644. Mr. Sheridan.] What proportion of carrots did you put into the chicory?—From 25 to 75 per cent.; just the same with rye; rye is used to a very great extent in chicory, from 25 to 75 per cent.

1645. Mr. Kinnaird.] Is there any deleterious effect produced by mixing the charlock seed with mustard?—I am not aware.

1646. Though it is a less good article, there is no harm in it so far as you know, except that it is not mustard, and consequently a fraud upon the buyer?—It is a fraud upon the pocket; it is a fraudulent adulteration. I call it the same with regard to some kinds of grain; I was employed a long time in what is called a grist mill, and we split upon the average something like 60 or 70 quarters of beans a day. Egyptian beans contain a great deal of dirt; if a man sent us 100 stone of Egyptian beans, when we washed the dirt out, they would be reduced 5 stone, leaving 95. We asked the person who sent them "How much do you expect to be returned out of the 100 stone?" If he said he wanted 110, there being 5 stone lost in dirt, there must be 15 stone more sent to him than he actually sent to the mill, though it is not injurious to health, because it is 15 stone weight of water.

1647. You added the weight by soaking the beans in water?—Yes; we were compelled to do it; he sent so many hundred weight to be split, and told us he wanted so many hundred weight back; that is done by what is called in the trade "washing," with a view to wash the dirt out.

1648. Mr. Sheridan.] Have you had drugs also to grind in the same way?—Yes.

1649. How long ago was that?—I think it is about three years since my place was burnt down.

1650. What kind of proportion did the person who sent the drugs to you to be ground require back?—It depended upon the parties. Take the case of rhubarb; whatever may be said about English rhubarb being sold to the public as English rhubarb, it is mostly sold under the name of Turkey rhubarb, there is no question about that; I have had 5 cwt. of rhubarb sent to be ground, perhaps 2 cwt. would be Turkey, and 3 cwt. English rhubarb.

1651. Chairman.] In the ground state?—Yes.

1652. Mr. Sheridan.] Supposing a hundred weight of Turkey rhubarb were sent to be ground, would a hundred weight be returned?—No.

1653. Who suffered the loss?—The proprietor; perhaps he would make it up with inferior rhubarb.

1654. Chairman.] There was no attempt to supply the waste by any other material?—Yes. I have seen that done by satinwood sawdust. I have in my mind a case in which two hundred weight of satinwood sawdust were ground up with rhubarb, packed in flint bottles, and sent abroad.

1655. Mr. Sheridan.] Do you mean to say that that is the custom of the trade?—I do not say that it is the custom of the trade. I have ground but few things genuine, as far as my experience has gone.

1656. Mr. Kinnaird.] How long were you in business?—I was 30 years a mustard, chicory, drug, and spice grinder.

1657. During that time you very seldom sent forth a pure article?—No.

1658. Can you say whether adulteration has been rather on the increase during the last few years you were in business?—I am sure it has; new things have been found out, which years ago we knew nothing of, to adulterate with.

1659. Mr. Sheridan.] Had you any book?—I had a book till my place was burnt

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burnt down, which gave the detail of every transaction from the time I went into business. I made no scruple to show it. I have done as much in the way of adulteration as any man in the trade, and I have done more than almost any other man to expose it. I have done it in defiance of my employers, with a view to crush it; and I have felt exceedingly glad to have an opportunity of giving it a severe blow. I believe many honest men will thank any one who will put an end to it.

1660. Chairman.] Your belief is that in many instances adulteration is practised, not from a wish on the part of the manufacturer to deceive the public, but because he is compelled to do so by the competition of dishonest traders, who will adulterate?—Yes. I was in business with a gentleman who was a member of the Society of Friends, and he was very sensitive upon the subject of adulteration; he said to me, "Friend Gay, we are in the mustard trade, cannot you get me mustard that is pure?" I said, "I have tried it often; it will cost a good deal of money, and we may fail." He advanced me 300l., and I laid it out in pots. I went out myself with the pure mustard; I took my tests with me, and showed to the grocers that it was a superior article. I satisfied them, and I sold the pots by grosses, and I thought I had found a thing that would carry out our views; in three weeks, when the people began to mix up the mustard, because it was pure, it turned black, and they said, "Oh, we do not like it, it is black;" and it came back upon us, and was likely to be a very ruinous thing. I should think not less than 400 were returned on our hands all at once; my partner said, "You had better destroy the pots;" but I did not like to destroy the pots, so I turned the mustard out and put in our common mustard, which we made for the trade, and it answered very well.

1661. In point of fact, the public insisted upon having the adulterated article?—They did not believe that my genuine article was genuine; there are many things in this country of which the true flavour is lost.

1662. Can you inform the Committee of the adulterations in any other article?—I have heard much said about vinegar, and I have had a good deal of experience about vinegar. To show how wide many scientific men are in analyzing, I never heard yet that corrosive sublimate was discovered in any sample of vinegar; sulphuric acid and D. W., or distilled water, have been mentioned. I have heard it said that arsenic has been found, but I do not believe it. Corrosive sublimate has been used for years and years in some houses, and not a cask has gone out without a certain proportion of corrosive sublimate.

1663. Mr. Kinnaird.] What proportion of D. W. is used?—That depends upon the price of the vinegar.

1664. Chairman.] Do you believe that corrosive sublimate was mixed with the vinegar in injurious proportions?—I do. It was done to counteract the flavour, the roughness of the sulphuric acid; it was not done to give strength to the vinegar; when the D. W. and O. V. have been used the corrosive sublimate is put in to give it a fulness again in the mouth.

1665. Chairman.] Are those technical expressions in the trade, O. V. for oil of vitriol, and D. W. for distilled water?—Quite so; corrosive sublimate is called "The doctor."

1666. Mr. Sheridan.] The term O. V. would be applied not in your trade only, but in all trades where sulphuric acid is used?—I suppose it would.

1667. Mr. Moffatt.] As a drug grinder were you ever called upon to introduce any other substance into a drug before you sent it home?—Yes; sometimes the adulterate has been sent to me to mix, and sometimes they have sent to me to say, "Put in so-and-so, and charge for it."

1668. Chairman.] Did they go by any other name?—No; I do not know that they did.

1669. Mr. Moffatt.] Were those instructions applicable to a great variety of drugs?—To rhubarb, jalap, and cocculus indicus; I have ground many cwt. of cocculus indicus.

1670. What is it used for?—I do not know; I suspect to go into the poor man's drink.

1671. You do not know any manufacture to which it is applied?—No.

1672. For whom did you grind cocculus indicus?—For druggists.

1673. Used you to grind for wholesale druggists?—Yes.

1674. Do you mean to say that it was a general instruction you had from those

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those houses to mix other ingredients with the drugs?—I cannot say that I had one customer on my book but what have been compelled to mix more or less; some things they would not have touched, let the consequences be what they would.

1675. Still your experience as a drug grinder leads you to say that it is the prevalent practice with the wholesale druggists to send two substances to be mixed together, to be sold as one article?—I have found it so.

1676. And you have worked for a great number of respectable wholesale druggists?—I have worked for a great number of respectable wholesale druggists in the country, where my mills were.

1677. Where were your mills?—Near Leeds.

1678. Have you had any experience with regard to drug grinding in London?—I have ground a good bit in London.

1679. Does your evidence apply also to the London druggists?—Yes; that case of the rhubarb being mixed with satin wood sawdust occurred in London.

1680. *Chairman.*] As a rule, would you say that the custom of dealers in London is of a more straightforward and honourable character than in the country?—Some of the larger dealers.

1681. *Mr. Moffatt.*] Still the majority of the wholesale druggists in London do send drugs to be ground with other substances?—I have had to do so for them.

1682. *Chairman.*] How long were you a drug grinder in the neighbourhood of London?—Something like six or seven years; I was five years in one place.

1683. Were you doing a large business at that time?—Not very large.

1684. You would not like to give an opinion upon the whole trade in London?—No.

1685. *Mr. Sheridan.*] Did those druggists who would not have recourse to the practices you have described suffer a loss from the consequences?—I think some of them were too well established to suffer much loss; I think the evidence given as to adulterated drugs applies mostly to the low neighbourhoods of London and all large towns.

1686. *Mr. Kinnaird.*] Have you had any opportunity of conversing with other drug grinders, and people in the same line of business as yourself?—Yes.

1687. Did it appear from their testimony, as far as you gathered it, that their experience tallied with yours?—Having men come from other mills to work where I was, and learning from them new modes of adulteration, convinced me that it was carried on in other places as well as where I was; men coming from one mill to another will talk; they would say that their practice was to use such and such things or qualities.

1688. *Mr. Wise.*] From time to time, as I understand you, fresh inventions are taking place for the purpose of adulteration?—Yes. There are new things used now for adulteration that I knew nothing of years ago.

1689. Can you give the Committee one or two instances of novelties in the art of adulteration?—Yes. I never knew till within the last four or five years that bone dust was used in white pepper; it is called ivory dust. I never knew anything but rice used. I have had as much as five cwt. of ivory dust sent me at a time, and was fined 25 l. for having bad pepper found on my premises.

1690. *Mr. Kinnaird.*] There is some law against the adulteration of pepper?—Certainly; and all articles paying duty to the revenue.

1691. *Mr. Wise.*] Can you state any other cases?—I think I can. For the adulteration of turmeric, I had sent me something called royal yellow. Being a colourman, I knew it was a composition of chrome yellow reduced with Paris white, or something of that sort; that was mixed with turmeric. It could very easily be detected if the turmeric was used by dyers.

1622. I suppose it is cheaper?—Much cheaper.

1693. *Mr. Kinnaird.*] Do you think the existing law is an effective check in many instances?—It used to put them sometimes in fear. Many a one who would buy an adulterate for pepper under the name of P. D., when they found the Excise getting a little alive to it, would put it out of their houses.

1694. What is P. D.?—I suppose it would mean pepper dust; it is called P. D. in the trade. It is manufactured from rape or linseed cake, mustard dross,

dross, Cayenne pepper; the pepper dust is an adulterating article, well known under the name of P. D.

1695. *Mr. Wise.*] What do you consider the article most in use which is principally adulterated?—I should say mustard, vinegar, and pepper are adulterated as much as anything. Chicory used to be adulterated, but it is now worth only 10 l. a ton. Those are articles extensively tampered with. Rhubarb, as I stated before, is very extensively adulterated with English rhubarb.

1696. Is it ever sold as English rhubarb in chemists' shops?—It never came to me to be marked; it was always marked "Fine Turkey Rhubarb."

1697. Do you think if you wanted English rhubarb, and went into a chemist's shop and asked for it by that name, he would supply you with it?—I think if I went to a white lead man and asked him for Dutch lead, he would tell me he knew nothing about it.

1698. *Chairman.*] Is there any other article which you can mention to the Committee?—I believe many articles of confectionery are adulterated; I think carraway comfits are very extensively adulterated, and also many of the peppermint lozenges. I believe the basis of both those and coriander and almond comfits are flour; after the seeds are put into the pan, a little syrup is thrown over them, and that is dusted over with either flour or whiting, or plaster of Paris; a pretty strong coat is put upon them in this way, and then they are finished with a stronger and better syrup. They are adulterated in that way. The colouring matter is sometimes red lead or vermilion, lake liquor, cochineal, gamboge, and chrome yellow.

1699. Some of those are perfectly innocuous, are they not?—Some of them are; cochineal and lake liquor; I do not think there is much harm in lake liquor. Cochineal is an insect, and I do not think there is much harm in it; I believe some of the colouring matters are very injurious.

1700. Do you know anything about Shield's green?—I never knew that it was used in confectionery till I heard the evidence given the other day; I rather doubted it, knowing it to be such a deadly poison. With respect to the article of milk, I know that milk is very largely adulterated, not so much with chalk, I believe, as with other matters; chalk is too easily detected; boiled white carrots are used. The water will make a very excellent substitute to mix up with milk, and the residue forms very good food for the cows.

1701. *Mr. Moffatt.*] Is a decoction of white carrots prejudicial to health?—I do not think the term adulteration should be confined to everything which is injurious to health, if the pocket is injured by it.

1702. If it is sold at a less price, is the buyer's pocket injured?—I should say so; I think they take pretty good care to make a better profit out of it.

1703. *Chairman.*] Whether the article is sold at a less price or not, is it a fair thing for a man to sell an article under one name which it has no right to bear; in fact, is it not a fraud?—It is; that is the case with many scores of articles that are sold.

1704. *Mr. Kinnaird.*] What effect is produced by mixing this decoction with white carrots?—It gives a fulness and sweetness to the milk.

1705. What is the easiest way of detecting it?—Let it stand for a day or two and it will have a nasty smell.

1706. *Mr. Moffatt.*] You have been asked the question, whether it is not a fraud if any article is sold by a vendor for one article when he knows it to be another article, to which you replied "Yes." Assuming the case of milk, if there is a gallon of this mixture sold as milk, and there is a quarter of a pint of parsnip decoction in it, and the rest of the gallon is milk, do you consider that a fraud?—Yes, I consider that is a fraud, unless the party were to sell it for what it was.

1707. Do you believe that nine out of ten of the articles sold in this country are sold perfectly pure without any admixture whatever?—Nine out of ten is a very great number to take. I really should say that seven out of ten of all articles are adulterated, more or less, either with a view to increase the profit or with a view to make them appear better than they are.

1708. Are you prepared to state to this Committee what amount of the total importation of articles of food is perfectly pure when imported?—I am not prepared to say.

1709. Do you believe, as a rule, any of them are?—I have had very little to do with imported articles fit for use. I should be exceedingly jealous of any—

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thing imported in a manufactured state from abroad, knowing what I do of the propensities of people to adulterate. I have seen vinegar imported from abroad, and I know it to be adulterated.

1710. We have had evidence with regard to isinglass; would you say that it was a fraud to sell isinglass as pure if there were ten per cent. of foreign matter in it, or two per cent?—Yes. I have had a great deal to do with cutting and manufacturing isinglass. Russian isinglass is mixed with the Brazilian isinglass; still it is isinglass: one is worth 14 s. a pound and the other 5 s. or 6 s. If I was to take 7 lbs. of Russian isinglass and 3 lbs. of Brazilian, and if I sold it for Russian isinglass, I should be committing a fraud upon the purchaser.

1711. In the same way, sugar is stated to have been much adulterated; is it your impression that the vendor buying that sugar from the importer is guilty of fraud?—Where there is no law there is no sin; if he bought it for pure sugar he is not guilty of fraud.

1712. So in the same way, the vendor of drugs, if he bought them as pure drugs, is not guilty of fraud?—No.

1713. Mr. Kinnaird.] Do you believe that adulterations are made with the benevolent view of providing a cheaper article for the poor, or that it is done for the sake of obtaining a larger profit?—In some instances parties adulterate in order that they may reduce their price, to get custom by selling a cheaper article.

1714. And underselling the fair dealer?—Yes. I do not know that they would make any more profit than upon the proper article; poor people catch at a cheap thing.

1715. Mr. Wise.] On the whole, you think there is so much adulteration at present that the law is not sufficient to stop it?—I think there is no protection for the public.

*Mercurii, 12<sup>o</sup> die Martii, 1856.*

## MEMBERS PRESENT:

Viscount Ebrington.  
Viscount Goderich.  
Mr. Moffatt.  
Mr. Gregson.  
Mr. Peacocke.  
Mr. Villiers.

Mr. Scholefield.  
Mr. Wise.  
Mr. Cowper.  
Mr. Kinnaird.  
Mr. Swift.

WILLIAM SCHOLEFIELD, Esq., IN THE CHAIR.

*John Moore Neligan, M. D., called in, and Examined.*

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1716. *Chairman.*] YOU are a Physician in Dublin?—I am.

1717. How long have you been in practice?—About 20 years.

1718. Has your attention been turned to the question of adulteration, either of articles of food or drugs?—In drugs especially, having lectured on *materia medica* for some years, and having also written a work on medicines including their adulterations.

1719. Will you favour the Committee with your views generally as to the existence of adulteration in drugs?—As regards drugs in Ireland, I believe they are much purer than they are in England, chiefly because we have a power of inspection in the College of Physicians. We inspect apothecaries and druggists' shops in the city of Dublin and the neighbourhood, under an Act of Parliament.

1720. Are you aware that the same power exists in this country?—Yes, but applying to the city of London only.

1721. What is the practice of the College of Physicians in carrying out this power?—On the 18th of October the College of Physicians elect annually four

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of their body as inspectors of apothecaries' shops; they are usually the four censors. These divide among themselves the north and south sides of the city of Dublin. They are associated with an apothecary attached to each two; they inspect once a year. Though the Act of Parliament directs an inspection four times a year, a single careful inspection is made once every year of all the shops on the north and south sides, and a report is made to the College of Physicians by the inspectors. Hitherto this report has been merely inserted upon our minutes, but we have received the opinion of counsel within the last week that we have the power to publish it, and it is contemplated to do so for the future. In consequence of this inspection we find there has been a very gradual and general improvement in the shops in Dublin as regards the preparation of medicines. Still there are many of them sold very impure.

1722. What is the title of the Act to which you refer?—The Act is 1 Geo. 3, c. 14, "An Act for the Prevention of Frauds and Abuses in the vending, preparing, and administering Drugs and Medicines." It is an Irish Act.

1723. Is there any specified time for making this examination?—There is not; it is made as it suits the convenience of the inspectors.

1724. Will you state generally what has been the result of that inspection; you say still there is a considerable amount of adulteration existing?—The custom generally was, to classify the shops on each side of the city into three, four, or five lists, Nos. 1, 2, 3, and so on, according to the qualities, the fitting up of the shops, and the attendance of the apothecaries' apprentices. Last year two of the inspectors on the south side took a great deal more pains, and went very carefully into the subject, and in the report which their College of Physicians authorised me to show to the Committee, they have gone with considerable care into an account of the state of the various shops.

1725. Can you give the Committee any statement as the result of that report; is there any synopsis of the report?—The report is very short in itself. It states that in several instances there has been a decided improvement over the result of the previous year's inspection. I find altogether in the first class, on the north side of the city, there are twelve shops placed.

1726. The first class, I presume, includes those who sell the most pure goods?—Yes; and where the attendance is very good. The second class contains ten shops. They possess a good supply of drugs, and are apparently well attended to, but yet are deficient in some respects. No. 3, which contains seven shops, comprises those which were deficient in drugs, badly attended, or in a dirty condition. No. 4, bad in every respect, contains but three shops. The south side contains more than eighty apothecaries' shops. The north side contains only thirty-two.

1727. Viscount Ebrington.] The goodness or badness appears to have been less determined in this classification by the purity or impurity of the drugs sold than by the general state of the shops as to cleanliness, and care and goodness of attendance?—It includes both. The usual custom is for the inspectors to call upon the apothecary or his assistant to show them four or five preparations; they examine them, and if they find these four or five are pure, they are satisfied. If they find them bad, they inspect others, and from the general result they draw their conclusions.

1728. *Chairman.*] Are any means taken besides those you have mentioned for punishing any persons who are in the habit of selling adulterated medicines?—There is the penalty, which of course is never at present enforced, of burning the drugs in front of the apothecary's shop by the beadle of the college. There is no other penalty where a drug is impure or bad; but for obstructing the examiners the penalty is 20 l. The object of the Act seems to have been for the safety not only of those who prescribe medicines, but of those who consume them, and therefore it was intended, as we have imagined lately, that there should be a publication of the result, and this our counsel has told us is the case.

1729. Viscount Ebrington.] With the names?—Yes.

1730. *Chairman.*] Are the Committee to understand that no punishment is at present inflicted upon those persons through the instrumentality of the College of Physicians?—We have never attempted any punishment. The Act has been in fact to a certain extent a dead letter, from the want of publication hitherto. The reports have been simply entered in our books for our own satisfaction.

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1731. Even considering the small amount of power which you supposed you possessed, the knowledge that you had the power of inspection you think has tended gradually to improve the quality of the drugs and medicines in chemists' shops?—Very much so, I think.

1732. Though you have inflicted no punishment?—Though we have inflicted no punishment.

1733. Viscount *Ebrington*] Not even publicity?—Not even publicity. Some of the drugs which are imported are imported impure; some of our apothecaries also purchase the compound preparations of our pharmacopœia, instead of making them themselves, and these are usually bad; such as pill masses, containing three or four different medicines, or electuaries, or extracts.

1734. Are they supplied from wholesale druggists in England to the druggists in Ireland?—Some are, though they ought to have been prepared differently; there are different pharmacopœias in the two countries, and yet some of our Irish apothecaries purchase from English druggists, who sell them a different preparation from the Irish one.

1735. *Chairman*.] Is the English preparation in conformity with the English pharmacopœia?—We suppose it to be so.

1736. Is there any difference which you can define pretty distinctly between the two pharmacopœias?—Several.

1737. Is there a greater tendency to increased strength or purity in the Irish pharmacopœia than in the English?—The difference seems rather arbitrary. The doses differ in some of our very active medicines in the two pharmacopœias.

1738. Mr. *Wise*.] With respect, for example, to the article of prussic acid; in England the strength of that is two per cent.; in Scotland it is double that amount, is it not?—Not quite double. In Ireland it is very nearly the same as the English.

1739. Therefore a very different effect might be produced by the same quantity of prussic acid administered in the two countries by medical men?—I should say not with prussic acid. That might occur with other preparations, with solutions of morphia, for example, in which the difference of strength is much greater. Prussic acid is given always in very small doses; and therefore a trifling difference in the strength is not so important.

1740. *Chairman*.] What articles have you found to be principally adulterated?—Many of the leading articles. One of them is scammony, which is a very useful and excellent purgative medicine, and which is adulterated to an enormous extent, both before importation and afterwards.

1741. With what is it adulterated before it is imported?—With chalk, usually, before it is imported, and sometimes with starch also; the chalk may be added to make it pack more easily, from being drier; but nevertheless it contains a perceptible amount of chalk; the starch is rather a fraudulent adulteration of it.

1742. What is the kind of adulteration which is practised in this country?—The same.

1743. How can you distinguish between the adulteration which takes place before importation and that which takes place in this country?—Only by getting the articles from the wholesale druggists. I obtained some years ago specimens from some of the first wholesale druggists in London. I found adulterations in the very best scammony imported; but the adulteration was simply with chalk.

1744. Those were adulterations for which the importers were not responsible?—Yes.

1745. Mr. *Wise*.] Without any adulteration, am I correct in supposing that there are inferior varieties of scammony?—Yes; the best scammony may be purchased at about 45 s. the pound.

1746. So that several pounds of scammony which may be worth only from 7 s. to 10 s. may be mixed with a pound of scammony varying from 35 s. to 48 s. in value?—They would scarcely take that course; they would sell the impure scammony at the very highest price. A great deal of that is due, I believe, to the custom of contracting for drugs, which our great workhouses and large dispensaries always do, so that the lowest contractor, irrespective of character, will very often get the supply of a workhouse with drugs, and will send in impure medicines.

1747. Mr.

1747. Mr. *Moffatt*.] Do the dispensaries take no means of testing the quality of the drugs which are delivered?—Not that I am aware of; the physicians of the large hospitals and dispensaries in Dublin sometimes look at them.

1748. Have you heard of their ever being rejected in consequence of inferior quality?—Yes. I have been physician to Jervis-street Hospital for several years, and I have directed the apothecary to return medicines which I believed to be badly prepared or impure.

1749. Mr. *Wise*.] So that whatever precaution the purchaser may take he has no remedy except in having an honest person to deal with?—Certainly, he has no other remedy between the public and the apothecary; but the apothecary has a remedy with the druggist. We have an Apothecaries' Hall in Ireland, somewhat the same as you have here, and there they prepare medicines themselves, and sell them always in a pure state.

1750. Viscount *Ebrington*.] Has Apothecaries' Hall in Dublin much custom?—Very large.

1751. Are the prices generally charged there higher, lower, or identical with those in the trade?—Generally a little higher.

1752. But people cheerfully pay a somewhat higher price in order to feel secure of having an unadulterated supply?—As regards the consumer of drugs, he is not affected by it; it is only the apothecary who purchases the drugs who is so, because the consumer pays the same price for a draught or a pill whether it is made with pure or impure medicines.

1753. Mr. *Moffatt*.] Is the Irish Apothecaries' Company an incorporated company?—It is, by Act of Parliament. They have the sole power of licensing. We have no chemists to compound medicines in Ireland; a chemist cannot compound medicines; no one can compound medicines or keep an open shop but a person who has undergone an examination and has been licensed by the Apothecaries' Hall of Ireland.

1754. Is a fee paid for the licence?—A very small fee.

1755. Viscount *Ebrington*.] The practice is an efficient one, is it?—It is very carefully carried out.

1756. The examination is not a merely nominal one?—It is a very careful, good examination.

1757. *Chairman*.] Can any one practise in Ireland without undergoing an examination?—No one can open an apothecary's shop without undergoing an examination. An apothecary's apprentice is compelled not only to study pharmacy, but he must study a certain amount of anatomy, chemistry, botany, materia medica, and the practice of medicine; he must attend an hospital for a year; all that he must do before he can open a shop.

1758. Is it a common practice to associate the two businesses together of chemist and apothecary, or are they generally exercised separately?—We can scarcely call an apothecary a chemist; we have chemists who sell large quantities of the ordinary drugs, Epsom salts and castor oil, and so on, but they cannot compound prescriptions. We have these, not alone in Dublin, but in the country parts of Ireland, combined with grocers' shops; but an apothecary in Dublin usually confines himself to compounding his own or physicians' and surgeons' prescriptions.

1759. You have no class in Ireland corresponding with what are called pharmaceutical chemists in this country?—No.

1760. Viscount *Ebrington*.] It is the high value set upon the purity of drugs by those carefully trained and licensed apothecaries which leads to the great custom at a somewhat higher price, which you describe as being given to the Apothecaries' Hall, in Dublin?—A great deal must be due to that. They have a large custom also, as they alone are allowed to supply the military with drugs and medicines.

1761. Mr. *Moffatt*.] As I understand you, the Apothecaries' Company in Dublin supply the wholesale druggists; is not that so?—Their functions are divided into two in fact; they have a drug shop in which they hold shares, and they also have the power of granting licences to apothecaries to open shops.

1762. Do they make up prescriptions?—They do so; my own are frequently made up there.

1763. Have they a considerably larger trade in making up prescriptions than any other apothecaries in Dublin?—I should say a smaller trade.

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1764. Viscount *Ebrington*.] They supply, as I understand, other apothecaries to a very large extent?—A very large extent.

1765. Mr. *Wise*.] Has your attention been drawn to the system pursued in France with regard to chemists and druggists?—It has.

1766. Does not it approach very nearly to the system pursued in Ireland?—There is one very essential difference. The French pharmacist is not a practitioner of medicine, he merely compounds prescriptions, while the Irish apothecary is educated in medicine, and prescribes.

1767. My observation applied rather to his being licensed to dispense medicines?—So far there is a similarity.

1768. Do you think it would be a public advantage if the same system were pursued in this country?—I do; a very great advantage.

1769. Would you apply the same system to the grinders of drugs?—No; I would scarcely expect them to undergo an examination; it would be so far an advantage if they were licensed, that they would be open to the inspection of the Excise officers.

1770. You think it desirable that they should be licensed, and registered, and subject to frequent inspections, with penalties and the forfeiture of licences if found guilty of adulteration?—I am scarcely competent to give an answer upon that subject.

1771. *Chairman*.] Are you of opinion that adulteration goes on in the hands of the drug-grinders?—Certainly it goes on somewhere. I will not say whether it is with the wholesale druggists after the drugs leave the drug-grinder, or before they go to the drug-grinder.

1772. You think there is a good deal of adulteration, which lies between the drug-grinder and the wholesale druggist?—Yes.

1773. But you would not like to fix it upon one or the other?—No.

1774. You stated to the Committee that the Act you quoted of George the Third gives the power to the College of Physicians to inspect and to publish the names where they find persons vending adulterated drugs, and also to punish them by burning the drugs before the door of the individual, and in extreme cases by levying a penalty?—Yes.

1775. But you are not aware that that Act has ever yet been enforced?—I am aware that it has not been enforced.

1776. Why has it not been enforced?—In the first place, carrying it into effect is a very disagreeable operation. To members of the College of Physicians it would be a very unpleasant thing to go and burn a man's drugs in front of his house. Another reason now is, that as we really have the power of publishing our reports; this we consider will be quite an effectual check.

1777. Being now advised that you have the power of publishing the names of the individuals when you find these adulterated drugs, are you aware that it is the intention of the College of Physicians to avail themselves of that power?—I have been sitting on a committee of the College for the last month on the subject, and we have come to the determination of recommending the publication, first giving notice in the public papers of our intention so to do. I happen to be one of the censors of the College this year, and we purpose to take some pains for this purpose.

1778. Do you think any advantage would arise from submitting drugs when imported to an examination in bond?—That would scarcely give any security to the consumer of the medicines or drugs.

1779. According to your own account, if those impure drugs get into the hands of the druggists they cannot be so efficient as medicines as if they were pure?—They ought to be aware of the quality and not purchase those impure drugs. We find that drugs are not only adulterated, but that they vary in price remarkably. We have good and bad rhubarb and good and bad opium, and they vary in price very much in the market.

1780. In the case of an article which the importer called opium, but which did not contain a particle of morphia, do you consider that ought to be allowed to come into the country?—Certainly not.

1781. It has been stated in evidence that such opium has been imported into the country and has been purchased?—My own impression is that opium of that description is very rarely imported. It is sometimes sold in this country after the morphia has been extracted from it; that of course is a very dishonest fraud to commit.

1782. Mr.

1782. Mr. *Moffatt*.] Assuming an article was imported under the name of opium which had 60 per cent. of morphia and 40 of some foreign substance, would you think it right to prohibit the importation of that?—It might be very useful to obtain the residue of morphia which was in it.

1783. Viscount *Goderich*.] Should not you consider it a fraud to sell it under the name of opium?—I should consider it a fraud to sell it under the name of the best opium.

1784. Mr. *Moffatt*.] Is there any opium imported which is pure morphia?—There is perfectly pure opium which contains the full quantity. The College of Physicians in Edinburgh has given tests to chemists to distinguish good from bad opium.

1785. What per centage of morphia constitutes what you term pure opium?—It varies according to the country; from 8 to 10 per cent., or even as low as 6 per cent., would be very good opium.

1786. Cannot the buyers of those goods find out what quantity of morphia they contain?—Yes.

1787. If we were to prohibit opium which did not contain the prescribed amount, we should very much lessen our supply of morphia, should we not?—That would not answer at all.

1788. *Chairman*.] Do not you think that any advantage would arise from an examination of drugs in bond?—A very slight advantage.

1789. Are you aware that the American Government examine all goods imported?—Yes.

1790. What is the result in America?—The reason they adopted that practice there was because they were in the habit of importing a large quantity of drugs made up for the American market. Blue pill was made up in this country to be taken to America; it consisted of ordinary clay mixed with Prussian blue, sand, and other substances. This went so far that the American Government interfered, and appointed inspectors of drugs; but I cannot well understand how, unless they have one in every port, they could stop the importation of impure drugs.

1791. Mr. *Cowper*.] Do you think it is easy for druggists, in purchasing their drugs wholesale, to detect at once any want of purity in them?—Yes; the druggist has the same power that any inspector possibly could have.

1792. Would not it impose trouble and labour upon him in purchasing those articles?—A glance of the eye will tell the quality in many cases; I could tell at once a good from a bad scammony; and so as to bark or opium; the druggist can tell most of the important drugs by the eye.

1793. *Chairman*.] Am I to gather from your evidence, generally, that you think the existing means at the disposal of the College of Physicians in Ireland are sufficient to check adulteration in drugs?—Certainly they are not sufficient. This Act does not refer to Dublin only, but to Ireland generally. We cannot expect the College of Physicians to go all over Ireland, and there is a clause of the Act giving authority to the chief magistrate in each country town to take to his assistance two doctors of medicine of certain universities mentioned, and with them he has power to go and inspect the various apothecaries' shops in his district. That portion of the Act was never carried into effect; it was a thankless office, there being no payment for it, and they were not inclined to undertake it. The censors of our own body did not wish to undertake the full carrying out of the Act. We are required to inspect four times a year; but the College has very limited funds at its disposal, and it must pay the inspectors. We pay each inspector ten guineas a year. With regard to the apothecaries of Ireland, there has recently occurred a lamentable case in the north of Ireland, showing the necessity for a good education. It is the case of Captain Kent, of the Lancashire Militia, who was poisoned accidentally in the town of Newry by the ignorance of an apothecary's apprentice; in fact, I am wrong in saying an apothecary's apprentice, because the master was not licensed, and he had been punished already for opening his shop without being so. He substituted, in his preparation of the medicine, aconite, for a very simple bitter which had been prescribed; that was the result of ignorance. He did not keep a copy of the prescription, and when Captain Kent's servant called and asked for the medicine, the young man who was standing behind the counter said he remembered what it was, though he had not the prescription, and he wrote in his own handwriting, which has been since obtained, "tincture of aconite," as the medicine ordered.

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1794. Do

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1794. Do I understand you to say that this shop has been closed?—For opening the shop the owner had been prosecuted by the Apothecaries' Hall, and for a short time he had stopped selling medicines, but he commenced to sell them afterwards.

1795. Then you have no means of preventing a person selling medicines who has been convicted?—You may convict him again.

1796. You have no power of compelling the closing of shops?—No.

1797. Mr. Moffatt.] Have you any suggestion to make to the Committee in reference to those mistakes in giving poisons for other medicines?—The question has recently engaged the attention of the College of Physicians in Dublin very much; and at my suggestion the College has adopted rules which are to be immediately enforced. We have the power under this Act of publishing a pharmacopœia, and directing not only the weights and measures for the preparation of medicines, but even the vessels and utensils which are to be used in apothecaries' shops, obtaining for the enforcement of it a proclamation from the Lord Lieutenant and the Privy Council of Ireland. Before I left the College on Saturday last the plan proposed to be adopted was as follows: It was ordered that for the future all apothecaries and druggists do keep in their establishments medicines which are of a dangerous nature, of which we furnish them with a list, in angular bottles or vessels, and all those not contained in that list, in round bottles or vessels, so that an apothecary's boy, in going to a shelf to take down laudanum, for instance, will feel it is an angular bottle, and thus know it contains a dangerous medicine, while a round bottle may stand next to it, which he knows contains an innocent medicine. The second order is, that in dispensing medicines by physicians' prescriptions, or in selling medicines to any individual who comes into the shop to purchase, all liniments or medicines intended for external use be sold to the public in angular bottles or vessels, and those for internal use in round bottles or vessels. It has been known to occur over and over again that a nurse at night has got up and given the patient a dose of a poisonous liniment instead of an internal medicine; but even the most sleepy nurse would feel that the bottle was an angular bottle, and this would be a great security to the patient.

1798. Viscount Ebrington.] Is there any difference as to price in the two kinds of bottles?—I have been making inquiry, and I am told there is very little difference; but at present they have been so much in the habit of using angular bottles in dispensing that there might be some difficulty at first.

1799. You think that a decidedly better arrangement than the one which is now adopted in London by various chemists of sending medicines for external application in bottles of one colour, and the medicines for internal administration in bottles of another colour?—Yes; because at night it would not be possible to distinguish the two colours.

1800. Would this arrangement entail much expense upon the retailer of drugs?—I went into some of the most respectable houses in Dublin, and they all hailed with the greatest delight the proposal; they said it would be a great safety to themselves with regard to their own apprentices.

1801. They would willingly incur the expense?—Yes. I recollect one or two said it was rather a hardship to be compelled to go to this expense; but we in the College think the safety of one human life is of much more consequence than any expense of that kind put upon the apothecary.

1802. Mr. Peacocke.] It is the custom in England to copy the prescription in a book. Is that so in Ireland?—It is.

1803. Was that the case in this fatal instance that you have mentioned?—No. The custom in many houses is to return the prescription to the person who leaves it at the shop. They sometimes copy it into a book, sometimes on a piece of paper, and they place it on a file, which is a very careless practice. In this case they put the prescription on a file. They searched and could not find the prescription, and then the apothecary's boy wrote out the prescription from memory.

1804. Mr. Wise.] Assuming you are of opinion that the article supplied should be what is required and asked for by the parties, what do you consider to be the most effective mode of preventing the adulteration of drugs or an admixture of anything foreign to the original substance?—I really cannot devise any better plan than that adopted under this Act of our own; the plan of confiscating the drugs, and the publication of the name for the second and third offence,

offence, would be a very good plan. There should be a fixed rule of payment for the physicians engaged in the inspection, and then they would be disposed to attend more carefully to it.

1805. Do not you think the principle of making the vendor more responsible and the purchaser less so, would be a desirable one to carry out. The whole burden is at present laid upon the purchaser?—There is really a difference between the case of drugs and that of food; the consumer here has no means of guarding himself, and we know between the two hands, the druggist who sells to the retail druggist and the druggist who retails to the apothecary, both of them may adulterate. The words of this Act are very strong; it says, "That the said president, censors, and fellows of the College of Physicians may have full power and authority to elect and appoint four of the fellows or members of their body to be inspectors and examiners of all laboratories, shops, ware or store houses, cellars, vaults, room or rooms, and of all other repositories, of what kind or name soever they may be, in the house or houses, or other place or places belonging to any apothecary, chemist, or druggist, or other person or persons whatsoever, who now do or hereafter shall import for sale, or buy and sell, or keep for those purposes, any drug, or simple or compound medicine, of what nature or denomination soever, which is or may be used as medicine for the health of man's body, within the city of Dublin, and ten miles circuit thereof."

1806. Chairman.] That includes wholesale druggists' shops and drug-grinders' establishments?—Yes. There is rather a curious exception made in the Act, "That this Act, or any part thereof, shall not be construed to extend to any merchant adventurer who shall import simple drugs or medicines for sale, and does not prepare, compound, or retail the same." So that an importer of drugs is exempted from this Act.

1807. Viscount Ebrington.] You consider, from your experience, that an inspection of drugs in bond, and a prohibitory law against the importation of any but the best, would not necessarily be advantageous to the supply of pure drugs in the retail trade?—Certainly not, in my opinion.

1808. Will you give your reasons for that opinion?—I may mention to the Committee that I have been editor of the "Dublin Quarterly Journal of Medical Science" for the last seven years, and it has fallen to my lot to read most of the medical journals, both Continental and American; and I find very constant complaints throughout America of the adulteration of drugs, notwithstanding they have this stringent law of inspecting in bond, which has now been in operation for some years.

1809. Mr. Moffatt.] Have you ever heard of any drugs being seized and destroyed at the ports of importation in consequence of their impurity?—I have read of it in America.

1810. Frequently?—I cannot say very frequently, but I have read of instances.

1811. Do you recollect in what ports this destruction took place?—New York chiefly.

1812. Any other port?—I think in Boston; I am not sure.

1813. Are you aware that this same law exists in any of the United States besides New York and Massachusetts?—I am not.

1814. Viscount Ebrington.] Is there not another reason against the introduction of such stringency with regard to the quality of the drugs imported into this country; is not it the case that drugs of a defective quality may, under chemical operation, supply, in perfect purity, the active principles of medicine, which may be of the greatest use to the community?—Certainly.

1815. Perfectly pure morphine might be extracted from very inferior opium, though in diminished quantity?—Certainly.

1816. Mr. Peacocke.] Do not you think a more effectual remedy even than the one you have mentioned, would be, if a person, say upon a second conviction, were prohibited from selling the drug he had been convicted of adulterating?—The apothecary might not be able to compound a prescription unless he had this very drug in his house.

1817. Chairman.] Would you suspend his licence?—I think the public would very soon practically suspend his licence when they found he was supplying them with impure drugs.

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1818. In the case you just now mentioned the person keeping the shop had been prosecuted, but, nevertheless, he was employed, even by respectable people?—The mere fact of his being found guilty of infringing the Apothecaries' Act did not prove that he sold impure drugs. The man is, I believe, an Edinburgh physician who keeps this shop, and it was his son and an assistant in the shop who made the mistake.

1819. He had not been prosecuted for selling impure drugs?—No; the Apothecaries' Company have no power to prosecute any man for selling impure drugs.

1820. Viscount *Ebrington*.] In your view, it would be desirable to have some legal authority to inspect drugs in the hands of the retail dealers, and to protect the public by employing a few competent persons to do for them what the public in general is not competent to do for itself, and could only do for itself at a great increase of trouble and expense?—Certainly; that would effectually protect the public, for they do not purchase from the wholesale importer.

1821. Mr. *Peacocke*.] How would you carry that out in small country towns?—The Act of Parliament which I have laid upon the table gives the means of doing that, but it is not a very effectual one. It would be extremely easy to allow the College of Physicians to appoint a competent person in each town to inspect and report to them.

1822. Viscount *Ebrington*.] That inspector might be allowed to itinerate at unequal intervals and test a certain number of drugs, and deal with the party selling them accordingly?—You would scarcely get competent physicians to do that; they could not leave their practice.

1823. Is it indispensably requisite that a competent inspector should be a physician; might not he be a person especially qualified for the purpose, such as an analytical chemist, and be employed in doing that and nothing else?—Certainly he might. Again, there is a difficulty, for an analytical chemist must be specially educated for the purpose, and acquainted with the appearance of compound medicines. For instance, in the case of extract of colocynth or electuary of senna, it requires a well educated physician, or a qualified apothecary, to detect the purity of them.

1824. Would not it be found desirable to appoint some competent person for employment of that kind, and to fill up his whole time in the public service, trusting that experience in that particular work would give him, after a while, special skill and aptitude in the performance of it?—There is no question that one individual would have a great deal of power in that way, but the event of that person being ill must be provided against.

1825. Mr. *Peacocke*.] Do not you see great objection to a resident inspector, because he would be under the pressure of local influences?—I have often thought over that; we have never found in the College of Physicians, in Dublin, that that effect is produced; we are obliged to take an oath to do the duty impartially. In the case of insurances upon lives too, we are obliged to receive the report of a country physician as to the health of his own patient.

1826. Mr. *Cowper*.] Would not your purpose be answered by employing sub-inspectors to purchase drugs and forward them to the central Board in Dublin, which would consist of analytical chemists and persons acquainted with drugs?—Unquestionably; but that would entail additional expense.

1827. Would there be any expense beyond the carriage of parcel by railway?—The inspection in Dublin would be an additional expense; and the law might be evaded thus; a man would soon become acquainted with the character and appearance of the persons coming to purchase in that way, and he might keep a pure medicine by him to sell to them in order to be sent to Dublin.

1828. Do you see any objection to the body who now visit the shops themselves employing any trustworthy means of obtaining drugs from shops at a distance and exercising their opinion upon the article so purchased, just as if they had themselves gone to the shops?—I do not see any objection to that. It might be a good plan,

1829. Mr. *Moffatt*.] Is it your opinion, from your extensive practice in Dublin, among both the poorer and the richer classes, that there is any general adulteration of food in Dublin prejudicial to the public health?—I really do not think there is; the bread, of course, varies in quality, but it is more in quality than

than from adulteration; there is great facility for obtaining pure bread and other food in Dublin, unless a person goes to a very poor neighbourhood.

1830. You have never met with bread the constant use of which would injure the health of a person?—I have tasted bread that I should not like to continue eating for some time.

1831. From being adulterated with alum, do you mean?—Alum is usually employed.

1832. Have you ever found crystals of alum in bread?—I should think that would be impossible; the heat in baking the bread would melt the alum, and destroy the crystalline appearance.

1833. *Chairman*.] What temperature produces that effect?—Alum will freeze at a temperature of about 200 degrees.

1834. What is the heat in baking?—Very much over that, certainly.

1835. Mr. *Villiers*.] Have you had much experience as to bread in Dublin, so as to know if it is adulterated?—No.

1836. Do the prices vary?—Not much; there is no assize of bread, but one of the wholesale bakers there each week establishes a fixed price, and his price regulates the others; he does not send out his bread by bread carts, and those who do so charge a halfpenny a quartern loaf additional for sending out. His bread is usually reckoned the best bread, and he has the largest sale; he so far regulates the others. Latterly there have been two other houses established to undersell him, and they are usually a halfpenny in the quartern under his price.

1837. Does that company profess to sell pure bread?—Yes.

1838. Do those who have undersold them do the same?—They profess to do so, but I cannot say that their bread is as good as the other; it is not adulterated, but it is not made from as good flour.

1839. You have no information upon the subject of adulteration of bread?—No.

1840. Mr. *Peacocke*.] Have you analysed any other articles of food?—No; I have not turned my attention to the subject.

1841. Has your attention been called to the fact that the meat sold to the poorer classes is unfit for food?—I have seen it myself. There is a weekly inspection by the Lord Mayor and his officers; he seizes the meat, and it is confiscated.

1842. Mr. *Villiers*.] Under what power does he act?—A local Act, which constitutes a market jury, who are sworn at each quarter sessions before the Recorder to perform their duty.

1843. Has that authority existed a long time?—It has.

1844. Therefore this inspection of food would be nothing new if it were extended?—There is an inspection over nothing else, that I know, but the meat markets.

1845. That is to see that people have good food, and are not defrauded?—Not so much to see that they have good food, but to see that they have not tainted food; that the animals are not diseased.

1846. It is a recognition of the principle of protecting those who might otherwise be defrauded?—It is.

1847. Mr. *Peacocke*.] Do you think, in consequence of this local Act, the meat in Dublin is better than in other towns, especially that sold to the poorer classes?—I think the meat sold to the poorer classes is of very fair quality in Dublin; there are some exceptions.

1848. *Chairman*.] Did you say that there was very little adulteration of food in Dublin?—So far as my own experience goes. I have tested pickles and coffee once or twice; pickles are almost all brought from England, and I have occasionally detected copper, in small quantities; and I have found chicory in coffee.

1849. Generally, you think the articles of food are pure?—Generally, I think so.

1850. Then I am afraid, according to that, the druggists are about the worst class in Dublin as adulterators of articles?—I think there is more adulteration in drugs than in almost any other article; probably it is more difficult to be detected, and that is the reason.

1851. Mr. *Moffatt*.] Did you find copper in the pickles, to an extent likely to be injurious to those consuming them?—Certainly not; we constantly order copper in medicine as a good tonic.

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1852. *Chairman*.]

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1852. *Chairman.*] You would not consider copper as a proper admixture with pickles, would you?—It is an accidental admixture, arising from boiling in copper vessels.

1853. Do not you think that is an objectionable mode of boiling in copper vessels?—In my own family, as regards preserves, I have not interdicted it.

1854. *Mr. Moffatt.*] Have you ever found much adulteration in milk?—The only adulteration I have found is water. In one of our hospitals we have adopted the system of the lactometer, and we generally find that the milk contains a very large quantity of water: but we were placed in rather a difficulty the other day, having advertised for a contract with reference to the supply of milk, we had only one contractor, who had supplied us for 13 years, and it was his milk that the water was in.

1855. *Chairman.*] Do you buy the cheapest article at that hospital?—No, not at all.

1856. *Mr. Moffatt.*] Is the milk which the cow yields invariably of the quality so as to come up to the test which the lactometer prescribes; does not the milk from some cows contain more watery particles than that from others?—It varies very much according to the breed of the cow.

1857. So that it may be pure milk, and yet may not come up to the test which the lactometer prescribes?—Not up to the highest test.

1858. *Mr. Villiers.*] Have you ever found other materials, such as chalk and calves' brains, in milk?—No, I never found anything but water. There is a bad habit in Dublin, as in other large towns, of keeping cows confined in close, unwholesome places, which deteriorates the quality of the milk very much.

1859. You have examined drugs, milk, pickles, and coffee, and you appear to have found them all adulterated?—Yes.

1860. From what little experience you have had, you have found them to be adulterated?—Yes.

1861. *Mr. Moffatt.*] You have not found them adulterated to any such extent as to injure the public health, have you?—Except with respect to drugs, I cannot say that I have.

1862. *Chairman.*] Do you think, with respect, for instance, to pauper children in workhouses, milk adulterated with water to the extent you name, can be sufficiently nourishing?—If the same quantity of milk alone is given, it is not so nourishing.

1863. You are obliged to give them double the quantity?—You ought, but they do not do it in workhouses, unfortunately.

1864. Then the public health is materially injured by the adulteration of milk with water?—I would check it in workhouses, in reference to the person selling the milk; I would not deal with him; and when detected, I would inflict a punishment upon him as in a case of fraud.

1865. What applies to workhouses, would of course apply in a minor degree to private families; children taking a great deal of milk must take a much larger quantity of liquid to obtain the same amount of nourishment?—There is no limit in the quantity of milk given in private families generally, or it is made up in private houses by bread and other articles.

1866. Not in the families of poor people?—There is a difficulty there, and I should be inclined to give the power of inflicting a heavy fine upon a person detected in mixing water with milk.

1867. *Mr. Peacocke.*] Have you examined spirits in Ireland?—No.

1868. *Mr. Wise.*] Has your attention been drawn at all to quack medicines in Ireland; are they consumed in a large quantity?—They are consumed, but not at all to the same extent as in this country. The proof of that is, that we have scarcely any proprietors of quack medicines in Ireland; the common medicines used are Holloway's Pills and Morrison's Pills, which come to us from England.

1869. In Paris the medicines which are called secret medicines are not permitted, are they?—They must be first submitted to a committee of the Academy of Medicine, which reports upon them; the prescription must be registered, and the plan of preparation is, to a certain extent, made public; but there is protection given to the inventor of the prescription.

1870. Do you think it would be desirable to put any limit to the sale of quack medicines in this country?—I do, unquestionably; they are exceedingly injurious.

injurious. I have, in my own practice, seen several examples of injury arising from the indiscriminate use of quack medicines.

1871. Have you seen any injury to the public health from the inferior quality of medicines; have you given prescriptions, and found that they have not had the proper effect?—Yes; for example, the effect which was intended by simple purgative medicines has sometimes not been produced.

1872. Are you of opinion that all dispensers and sellers of drugs should be licensed, and if found to sell adulterated articles, their licences should be suspended, or some penalty should be inflicted for the sale of such impure articles?—They should be exposed to punishment, increasing the punishment for the second and third offence. The question might occur then as to the withdrawal of the licence after a certain number of offences.

1873. *Mr. Villiers.*] Are you in the habit of recommending your prescriptions to be made up at particular shops?—No; having a tolerably fair share of house practice, I constantly ask my patients who makes up their prescriptions, and if it is a respectable house I advise them to continue there. If it were a house which is in the fourth class in our list, I should rather shake my head, and advise them to go to one of the first-class houses.

1874. Is it the practice among medical men in Ireland to advise their patients to go to particular houses?—No.

1875. Can you give the Committee any evidence as to what the feeling is among medical men with respect to impure drugs; do they feel it to be a great mischief?—They do; they are frequently disappointed in the effect they expect in the treatment of disease.

1876. Why do not they name some houses to their patients where they can get their prescriptions made up?—There is a great difficulty, which is this, our compounders of prescriptions are also prescribers; they are the family apothecaries. If a physician should say to a patient, "Do not get your medicines from so and so," that apothecary being dismissed from the family would be careful never to call in that physician or surgeon again.

1877. *Mr. Peacocke.*] I understand you to say that you would place some restrictions upon the sale of quack medicines, and upon the sellers of them?—I would prohibit them altogether.

1878. Would not that be opening a difficult question; would you include homœopaths in that restriction?—I would certainly; not that their medicines would do so much mischief, but they prevent good being done.

*Mr. Philip Ripley, called in; and Examined.*

1879. *Chairman.*] YOU are a Tea Broker?—I am.

1880. Have you been a number of years in the trade?—I have been altogether about 20 years in the trade.

1881. You have been some part of that time in China?—I have been 10 years in China.

1882. How long is it since you left China?—I left China in June 1854.

1883. Will you state to the Committee generally whether, in your opinion, tea is an article which is adulterated, and whether it is adulterated in China or in this country?—I should say, in my opinion, tea is an article which is free from adulteration.

1884. Both in China and in this country?—Yes; such adulteration, however, did exist previously to the discontinuance of the manufacture of lie tea, which was a mixture of dust, and I should suppose of some glutinous substance, probably made from rice. To the best of my belief, no other leaves than those of the tea-plant are mixed with the article purchased and consumed in this country, but it is imported pure; and with regard to the lie tea above referred to, it was first shipped from China, I believe, in 1846, so that it probably arrived in this country in 1847. The shipments at first were limited, and did not exceed, I should say, 5,000 boxes, or about 100,000 lbs. But when the prices realised for those became known, this quantity was increased threefold; and eventually as much as 400,000 lbs. to 500,000 lbs. may have been exported from China in one season.

1885. In what year was that?—That may have been in 1848 or 1849. The shipments, however, fell off when the fact of the stuff being spurious became known.

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*Mr. P. Ripley.*



Mr. P. Ripley.

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known in this country; which I endeavoured in some measure to assist, by sending specimens, both black and green, neither of which contained a leaf of tea, among my collection of teas in the Great Exhibition of 1851.

1886. Mr. Moffatt.] You were at that time in China?—I was.

1887. In those specimens which were in the Exhibition, there was no tea at all?—No; it was merely tea-dust, and I should suppose a substance probably made from rice.

1888. Nothing very deleterious?—I do not think so; the price obtainable in this country was so much reduced when the fact of its being spurious became known, that, instead of a profit being made, heavy losses were incurred by its shipment from China. This naturally prevented purchasers, and, to the best of my belief, when I left Canton in June 1854 the stuff was no longer made; I do not believe that in June 1854 this stuff was made.

1889. Mr. Villiers.] To whom did you make it known?—I exhibited those specimens to the public.

1890. Before that time did you make it known to the importers here?—No; because I was an importer myself; but I would never allow that stuff to be shipped.

1891. Importers were not ignorant that it was impure, were they?—I should think the probability is that they were not; the shipment of that stuff was confined to a few people only.

1892. Mr. Moffatt.] The result was, that the public did not like this tea, and discontinued its use, and it did not pay for importation?—The losses were so heavy, from the difficulty of making sales here, and the low price realised when sold, that it was no longer shipped from China, and consequently the Chinese discontinued the manufacture.

1893. Mr. Villiers.] That was after you made it known?—Other parties also wrote about it; but I tried to aid it by sending those two specimens with the mark on the top of the box; it was becoming partially known before I sent those specimens.

1894. Do you mean that complaints were made by persons who had purchased it in retail shops?—I cannot speak to that.

1895. You detected it and made it known to some persons here?—The wholesale houses here knew it, and a good many of them, I believe, would not buy it at all.

1896. Those who did not require your information?—No; I wanted to make it generally known in the country, and so I included those two specimens among those which I sent to the Exhibition.

1897. Mr. Moffatt.] I understood you that you were in China from the year 1846 to the year 1854?—I came over here in 1851.

1898. Are the Committee to understand that this importation of spurious tea continued to increase from the year 1846 up to the year 1851, or that it materially decreased in the year 1849-50?—I should say not; I think it increased. I think the importation in 1851 was probably the largest.

1899. What amount of this spurious stuff was imported in 1851?—I should not think it exceeded half a million pounds.

1900. You have stated that there was half a million pounds imported in 1848-49, and yet you think it increased from that time?—I intended to state that the first importation into this country was in 1847, and at that time it was about 100,000 lbs.; after 1847 it increased about three-fold, and eventually it became as large as 400,000 lbs. or 500,000 lbs.

1901. That was in the year 1851?—1850 or 1851.

1902. And since then you have information in your possession which enables you to express a strong opinion that no lie tea is sent from China to this country?—I believe it is not now made.

1903. Can you give the Committee any information as to the relative value of lie tea in 1849-50, and the present value of what remains in this market unsold?—The original price the stuff realised was about 1 s. a pound.

1904. Is it sold now at 1 s. a pound?—No.

1905. Would it be saleable at 6 d.?—You would have considerable difficulty in selling it at 6 d.

1906. Mr. Villiers.] Would not it do for mixing?—They might mix it.

1907. Did they use to sell it as inferior tea, or to mix with other tea?—I should think they mixed it before.

1908. It

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1908. It would do to mix now and sell in that way, at the price of good tea, would not it?—According to the best of my belief, there is so small a quantity of that stuff in existence that I do not think they would have it to mix.

1909. Have you been to China since 1851?—Yes. I came home in 1854.

1910. Have they discontinued the manufacture in China?—Yes.

1911. Do they adulterate any other tea which they send here?—No. In the first instance this lie tea was manufactured from tea dust, which we see in the streets of Canton in large quantities exposed for sale, which the poorer classes purchase, but the shipment became so extensive that the Chinese had recourse to dirt and anything. The next matter I have to mention in regard to adulteration is as to the facing or colouring green teas, which I for one do not consider an adulteration; the colouring matter is used in such small quantities, that generally speaking, it is scarcely perceptible, and it is only applied to meet the wishes of the foreign buyers.

1912. Is there no such thing as green tea?—I do not think there is, in its original state.

1913. Mr. Wise.] Is the main object to make an inferior tea look a superior one?—No; it is merely done to suit the demand of the foreign markets.

1914. It makes a tea which is not elegant in appearance look more attractive to the public eye?—It is coloured a little.

1915. Mr. Villiers.] There is a peculiarity in what is sold as green tea in this country?—Yes; it is manufactured in a different way.

1916. There is a peculiarity of flavour?—Yes.

1917. Is that the result of any facing, or any mode of preparing that tea?—All green tea is slightly coloured, I believe; but in this country I believe there is an error generally prevalent respecting the manufacture of green tea; it is generally supposed to be dried upon copper to give it that green appearance; but it is not the case; I believe it is the same leaf as the other, only grown in different districts.

1918. The properties are not quite the same?—No, it is cured differently.

1919. Mr. Moffatt.] You attribute the different properties to the different manufacture of the article?—Yes.

1920. That opinion is corroborated by Mr. Fortune in his two books on the Tea Plant in China, is not it?—I do not know.

1921. Chairman.] What difference is there in the mode of curing the tea?—The leaves of green tea are squeezed as soon as gathered, and rolled by the hand in wicker baskets, and when the juice has by this means been expressed, the leaves are placed in moderately warm iron pans and dried, being exposed to a bright light at the same time. With black tea, on the contrary, the leaves are left in a heap to ferment, and when they have become tough and somewhat decomposed they are exposed to excessive heat, and packed whilst yet hot.

1922. Do you think that that mode of preparing would account for the striking difference in the medical properties of the two teas?—I think so.

1923. You are aware that the effect of green tea upon the constitution of some persons is very different from the effect of black tea?—I believe it is entirely imagination. It never affects myself so.

1924. Mr. Moffatt.] Are black teas and green teas obtained from the same district?—I think not; there are the green tea hills and the black tea hills.

1925. There may be something in the different soil which leads to the difference?—Yes.

1926. Mr. Villiers.] Are the prices different?—Yes; there are different prices for all sorts of tea.

1927. Has not green tea a rather higher price?—No; there is low-priced green tea.

1928. Mr. Peacocke.] The highest price of green tea is higher than the highest price of black tea, is not it?—I think not. There are some specimens of black tea sold at a higher price than the best green tea is.

1929. Mr. Moffatt.] Is it your opinion that the colouring which green tea is subjected to is prejudicial to the health?—Certainly not; the quantity used is so small, that whatever might be the colouring matter, it would not affect anybody.

1930. What is the colouring matter generally made of, in your opinion?—Some people think it is Prussian blue; I am rather inclined to think it is  
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smalts; I have seen smalts imported into Canton in considerable quantities. It is a bright blue substance, somewhat similar to that which I have seen used in the manufacture. It has nothing deleterious in it.

1931. Mr. *Villiers*.] You have been present at the manufacture of tea?—I have.

1932. Have you attended it for the purpose of making any report upon the manufacture?—No; I was an importer of tea and inspected my own teas on the other side.

1933. Are you in a position to state that there is not any adulteration of tea there?—As far as I have seen in China, I should say that no adulteration exists in tea which is shipped to this country at the present moment. I have been in the factories there, and I have friends who have been in other factories in Shanghai and about the tea hills there.

1934. There would be an interest in adulterating tea, would not there, and it would be difficult here to detect it?—I think not; all teas before they are imported here are inspected by competent persons; every merchant there has his own tea inspector.

1935. There is nothing like a government officer to secure that pure teas should be exported?—That could not be done.

1936. Has the tendency of the price been to rise at Canton of late years?—No, I should say not.

1937. Why is that; there has been a much greater consumption, has not there?—Yes; but I do not think the price is higher in Canton now than it was some years ago; in fact it is not so high. When I first went to China the price of tea was much higher than it is now.

1938. What has been the occasion of the great fall in the price in the market here?—We have too large a quantity imported.

1939. The quantity is much larger than it used to be; but the consumption has also increased?—Yes; but we have too much tea imported to keep up the price.

1940. There is much more tea imported than there used to be; does not that increase the demand in the country itself for the article?—Yes.

1941. Can tea be produced infinitely there?—I should say it might.

1942. In the neighbourhood of Canton?—Yes; in all the different parts; there are several districts round Canton where tea is made. In fact you may see tea growing on the hills there close by the English factories. Several kinds of tea are grown close by the place where we lived, and that tea is generally used by the poorer classes of the Chinese, and is not fired for the home market.

1943. I presume you are connected with some houses in London?—I was an importer before; I am a tea broker now.

1944. You are connected with importers?—Yes.

1945. Mr. *Peacocke*.] Did those houses who imported this spurious tea in 1851 sell it as spurious tea?—They sold it as tea, and left the buyer to find out whether it was spurious or not.

1946. Viscount *Goderich*.] You do not know anything about the adulteration of tea at home, do you?—No.

1947. Mr. *Villiers*.] Are you answerable for the tea being unadulterated in your purchases; if you had to purchase tea for any party, and a portion of it were adulterated, should you be answerable for that?—I should say not.

1948. Mr. *Moffatt*.] You show the buyer the sample, and leave him to judge of it?—Yes.

1949. All you engage is that the bulk shall be equal to the sample you show him?—Yes.

Mr. *William Weston*, called in; and Examined.

Mr. W. Weston.

1950. *Chairman*.] YOU are a Tea Broker?—I am.

1951. You have been engaged in the tea trade for a considerable number of years, have you not?—For nearly 30 years, and as a principal 11 years.

1952. Have you been in China?—No.

1953. You have heard the evidence of the last witness; so far as your knowledge extends to the facts he has stated, do you concur with him in opinion?—Yes, mainly.

1954. You

1954. You believe that the tea imported into this country is generally imported in a pure state?—I do, decidedly. We have ourselves had no lie tea, such as Mr. Ripley referred to, through our hands since 1852; we then sold some at 6d. a pound, it having cost the merchant 1s. I believe that the importation had nearly ceased at that time, and at this moment there is no more tea of that description.

1955. Mr. *Villiers*.] Why did you sell this tea at 6d.?—Because we could not get a better price for it. I believe at this moment it would not be saleable at any price.

1956. *Chairman*.] As the tea is, in your opinion, imported in a very pure state, will you give the Committee your opinion as to the possibility of adulteration in this country; and your opinion as to whether adulteration does take place in the article of tea after it is imported?—It is my confident opinion that no article reaches the consumers' hands in a purer condition than tea.

1957. The Committee has heard something with regard to selling old saturated tea leaves?—It is a likely thing; but it would be to a very limited extent, in low shops, and in low neighbourhoods. I have had very considerable experience; we are interested as brokers to the extent, I dare say, of about 7,000,000 lbs. a year, besides coming in contact with the whole of the stock in London, which is, at the present moment, about 57,000,000 lbs., and I never met with an adulterated sample in the way of business; such a thing has been brought to me as a curiosity, but not in the way of business.

1958. Mr. *Villiers*.] It would be possible for that to be so and yet that a good deal should be sold, would not it?—Not as a system; it might be the case to a limited extent, but as a system it does not exist.

1959. What is your connexion with the retailers?—We sell as brokers; the importer puts his goods into our hands to value and to sell. We sell to the wholesale tea dealers; we do not come into contact with the retail dealers, but we are so intimately acquainted with the trade that we could not fail to hear of it.

1960. How is it you know what the retail dealers sell to the consumer?—I am not in a position to speak to that; it is my confident belief, speaking of an article with which I have been connected all my life, that the consumer receives his tea in a perfectly pure condition.

1961. The consumer is not always of that opinion himself, and he seems to purchase of a person you cannot answer for?—That is true.

1962. You have not made experiments, have you, for the purpose of satisfying yourself whether the retailer does generally practise frauds of this kind upon the consumer?—No; I believe that it is so utterly unfounded, that I have not given myself the trouble to seek any information on the subject.

1963. You can only answer for your own business?—I can answer for the tea trade of the port of London.

1964. The tea which you value?—And the tea which we come in contact with.

1965. Beyond that your experience does not extend?—No. I am sure I should have heard of it if such things existed.

1966. *Chairman*.] Your opinion as to the purity of the tea in retailers' hands is founded upon your belief, that if there were any extensive adulteration it must, from your connexion with the tea trade generally, have come to your ears?—Yes.

1967. Mr. *Villiers*.] Will you tell us how?—I have no doubt we should hear of it from some of the trade, or the retailers themselves would mention it, if their brethren were guilty of it.

1968. Would they tell you they had sold impure tea?—No; the retailers of such tea would not do that. I do not think there could be a stronger fact than this; there has been an attempt on the part of the Chinese, who would produce anything if they were paid for it, to introduce an impure article; the ordeal has been gone through, and the tea which cost 1s. has been sold at 6d., and is now utterly useless. The importers who would import anything which paid them import it no longer.

1969. Have you ever seen any specimens of sloe leaf dried and sold as tea?—There was a manufactory, which very soon came to an end, when tea was under the Excise; it was carried on in Mincing-lane, by a Mr. Heale; I once saw a sample of that tea.

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1970. Mr.

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1970. Mr. *Moffatt*.] That tea was made under a patent from Government, was not it?—I am not aware of that.

1971. You are, as a tea broker, very much thrown into contact with the wholesale dealers in London, are not you?—With nearly every wholesale dealer of repute.

1972. You would have an opportunity of knowing if they were aware of any practice of selling adulterated tea throughout the country?—Decidedly I should, in my opinion.

1973. You know most of the wholesale dealers in London, and are in daily communication with them?—I see most of them daily.

1974. Have you ever heard of the importation of any spurious tea into this country, except this lie tea?—No; some years ago we had some junk tea from Singapore, when the price of tea was such as to induce importations from thence. Some of it might have been tea, but the presumption was that it was not tea at all. As to the difficulty of detecting that, brokers are supposed to make so accurate and complete an examination of the tea, that they could not fail immediately to detect anything of the kind; it is not a question of the possibility of its eluding the observation of a proper judge.

1975. Mr. *Villiers*.] Did they detect this?—Certainly.

1976. Mr. *Moffatt*.] What was the consequence, in reference to this junk tea which was imported; what price did it realise on its earlier importations, and what price did it realise when it was found that it contained some spurious leaves?—The earlier importations brought above 1 s.; when it was found that the tea contained spurious leaves, I am enabled to say that it sold as low as 4 d., and I believe at a lower rate than that.

1977. Mr. *Villiers*.] What course did the brokers take on that occasion?—We did not consider the public as our clients; we simply could not sell it. I believe the fact was it was exported; I think it went to Holland.

1978. The merchants here exported it?—Yes; not finding a profitable sale for it.

1979. Mr. *Moffatt*.] The result being that the public would not take bad tea, and therefore it was exported?—Yes; I think the question may be safely left to the public.

1980. The price of this inferior tea, when first introduced, was 1 s. a lb.; and when the public would not take it, it fell to so low a price as 4 d., and was ultimately exported to Holland?—Yes.

1981. The brokers did not feel themselves called on to denounce the tea as spurious, but left the public to protect themselves, which they did?—Yes.

1982. Viscount *Goderich*.] Did this tea, which you say was exported to Holland, ever get into the hands of the public in any way?—It very likely did, to a small amount.

1983. The chief part, you said, was exported to Holland?—It was mainly exported.

1984. Mr. *Moffatt*.] This tea was only exported to Holland after it had been tested by the wholesale dealers in this country, and they had found that it did not suit the retail taste?—Exactly so.

1985. Viscount *Goderich*.] It appears that an attempt was made to sell it to the public in this country?—I think it is very likely, but not by respectable people. There will always be found, in a large trade like the tea trade, people who might see their advantage in selling an article for that which it is not.

1986. During how many years was the importation of lie tea carried on?—Mr. Ripley stated that it began in 1846; the last we had in our charge was in 1852.

1987. Therefore during six years the public were unable to take care of themselves?—Mr. Ripley stated that the amount reached half a million pounds; I should not have thought it would be so much. The public bonded stock of this country is 74,000,000 lbs.

1988. You said it was not respectable persons who sold the lie tea; was not the lie tea imported by respectable firms?—Yes; they sold it in the public market, and everybody who dealt with them knew what it was; we sold some ourselves; the last we sold was at 6 d. a pound, on behalf of the importer.

1989. Mr. *Kinnaird*.] I think I gather from your evidence that, knowingly, no broker would sell spurious tea?—I do not say that; I say he could not fail to know it; he would sell it as false tea; we should sell any article, letting the party who dealt with us distinctly know what he was buying.

1990. Mr.

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1990. Mr. *Wise*.] If the public had not found out what lie tea was, the importers of tea would have continued to have sold it?—If the importers could have continued to sell it profitably, doubtless they would have done so.

1991. Viscount *Goderich*.] I understand you to say that you should look upon a retail dealer who sold tea of that kind as not entitled to be called respectable?—If I was assured that the retail dealer made the consumer understand what he was buying, I should think him an honest man; if he did not do that I should think it a fraud.

1992. Mr. *Villiers*.] Do you know if anything is mixed with the tea to suit the taste of the public here?—Not in the case of tea.

1993. Are there any kinds of mixtures with tea which you could justify, as not being deleterious?—With the exception of low neighbourhoods, where re-dried leaves may be sold, for anything I know, though I have never seen such a thing, I believe it does not exist anywhere.

1994. Viscount *Goderich*.] I understand you to say that you do not in the way of business come personally into contact with the retail dealers?—No, excepting very large retail dealers, such as Twinings and Ridgways, and such houses.

1995. Mr. *Villiers*.] I presume, you must observe, that there are some teas which are sold at a very low price; does it ever strike you that that is too low a price for it to be genuine tea?—I do not recollect such a quotation. I have seen a quotation in grocers' shops which would not afford any profit, or such a shadow of a profit, that I regard it as a mere attraction; if a purchaser had presented himself I dare say the grocer would have advised him to take a better article.

1996. Viscount *Goderich*.] Do you see those prices very often advertised in the shop windows?—Less in the tea trade than in any other description of trade.

1997. Mr. *Villiers*.] What is the lowest price at which tea could be sold?—The selling price of common congou tea in bond is 9 d., the duty being 1 s. 9 d.

1998. Mr. *Wise*.] As you admit that fictitious articles may be so easily palmed upon the public, do not you think the public need some protection?—I do not think I admitted that they could be easily palmed upon the public.

1999. Could a poor man find out that he had lie tea in his teapot?—He would find that he had something nasty, and would not go to the same shop again.

2000. Chairman.] You would hardly give that opinion upon the subject of adulteration generally, would you?—I am speaking of tea only; my evidence is confined to that.

2001. Mr. *Moffatt*.] Is there anything prejudicial in the colouring of green tea?—I have heard the colour attributed to gypsum and Prussian blue; but it is used in so slight a form in the description of green teas which form the great bulk of the importation, that it is not injurious.

2002. Mr. *Villiers*.] Do you think it would be easy for any person to detect a mixture of inferior tea with superior, if sold as superior tea?—I do not think it would be easy; it is only a question of taste; the public are very critical judges; much more so than might be believed.

2003. You do not know of any check for that, probably?—Except in the public taste.

2004. There were formerly persons at the India House who were tasters of tea, who could at once pronounce upon the quality?—That was only under the scale of duties; a certain duty was paid for bohea and a certain duty for congou; the difficulty was to draw the line between tea paying the lower duty and the higher.

2005. There is no check to the mixture of inferior teas with superior?—I do not know of any, beyond the taste of the consumer and the interest of the retailer.

2006. Mr. *Kinnaird*.] You yourself would with perfect ease detect the different qualities of tea; would that facility be readily acquired?—No; it takes considerable experience to do so.

2007. If it is so difficult to acquire it, the public can be taken in for a considerable time before they find it out?—They would soon find out, I imagine, whether they liked the tea.

2008. Mr. *Moffatt*.] The question has been asked as to a quantity of inferior tea being imported; you are aware that under the system of the East India Company, there were official inspectors of tea in China; was not there under that inspection a very large quantity of tea imported of so low a quality that it would not be saleable in this country if imported now?—Distinctly.

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Q 4

Mr. Richard Locock, called in; and Examined.

Mr. R. Locock.

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2009. *Chairman.*] YOU are a Wholesale Tea Dealer?—I am.  
2010. Belonging to the firm of Garrett & Company, an old firm in London?  
—I lived there many years, and when my old employers gave up business, I partly succeeded.

2011. With whom does your connexion principally lie; with wholesale tea dealers?—With country buyers; we have very few town buyers at all.

2012. They are retail shopkeepers in the country?—Yes; we supply them to a large extent.

2013. You have heard the evidence of the two gentlemen who preceded you, to the effect that, generally speaking, tea is imported in a very pure state?—I quite agree with them.

2014. I need not ask you if you dispense it to your customers in a pure state?—I can answer for it that I certainly do.

2015. In your experience, has a large amount of spurious tea ever passed through your hands?—Never. I have an opportunity of sampling it myself, and if I saw a tea which I had the slightest doubt about, I should not purchase it.

2016. Is that the practice of wholesale dealers generally?—There are some dealers who would buy an inferior article; but that is not my business.

2017. You do not believe that they purchase a spurious article?—I do not believe they do, knowingly.

2018. If I understand you rightly, they can hardly do it, knowingly or unknowingly, for the article is not imported at all?—To a very slight extent indeed.

2019. You think there is some trifling adulteration still?—I think it is ceasing. As the former witnesses said, it did not pay the importers to bring it here, and they gave it up altogether.

2020. Are you speaking wholly of lie tea?—Of tea in which there were some spurious leaves.

2021. From your knowledge of the retail trade in the country, are you of opinion that the retail trade sell their tea in the same pure and unadulterated state in which you sell it to them?—I think they do. I think there has been a great deal of fuss made about adulteration in tea, which has never taken place.

2022. Mr. *Villiers.*] Will you go on to tell us why?—It would be so soon detected. There are so many shopkeepers in every country town, that if one sold an adulterated tea it would be known in a very short time.

2023. How would it be known?—Parties drinking the tea would find it out.

2024. Did you hear the evidence given by Mr. Weston, in which he said it would require extensive experience to detect different qualities of tea?—I presume he means it would take a long time to be a judge of the article, beginning from the lowest quality and going up to the highest. We have various qualities of the article. You would not understand that for a long time. If you brought me two teas, I would tell you the difference almost in a minute, by the sight and by tasting.

2025. An ordinary consumer could not discover it?—He would soon find it out.

2026. You said it required great experience?—Yes; that is beginning with the lowest, and going gradually through.

2027. What is the check upon a fraudulent sale of teas at a high price which are inferior?—The check would be this; if you had a bad tea you would soon find it out. If I sent you a chest of inferior tea, and charged you a high price, you would soon detect it. I think it better to leave all that to the consumer; he is the best judge.

2028. Do you think there is such a marked difference between teas as that a poor man can at once discover the difference between tea worth 2s. 6d. and tea worth 3s. 6d. a pound?—I think he could.

2029. Mr. *Moffatt.*] Is not it generally found that a person who sells the best tea at the lowest price gets the best trade?—It is; there is not a shadow of a doubt about it.

2030. Mr. *Villiers.*] Do you say the lowest price, or the best tea at the lowest price?—The man who sells the best tea at the lowest price.

2031. Mr.

2031. Mr. *Moffatt.*] Did you understand the answer which has been referred to, in which it was stated that it required a long experience to be a critical judge of tea to refer to this; that it requires a long experience to be an accurate judge of the relative price in different grades of tea, rather than a long experience to discriminate between spurious tea and true tea?—Most assuredly. We have a much greater difference in quality in the article which comes from China.

2032. Mr. *Villiers.*] There is so little difference apparently in the taste of the different qualities, that it requires great experience to distinguish them?—We go on by degrees from the lowest up to the highest quality of tea. Sometimes there is no very great difference between two qualities, varying in price to the extent of 2d. a pound, till we get up to 1s. and 1s. 6d. I understand very frequently from retail dealers, if they happen to make a change in their canister by a fresh importation, there is a complaint made. The man has given the same price for the tea, and he hopes it will be as good, but there is a little difference in the taste, and it is soon found out.

2033. *Chairman.*] You say that the public are very well able to take care of themselves in the article of tea?—I think they are.

2034. Even if a person had sold an article which was not tea at all, you would not think it desirable to interfere to punish that person, though he sold it as tea?—If he called it tea, and sold it as tea, and it is not tea, I think he should be punished; I hardly think there is any adulteration of tea taking place in this country.

2035. Supposing lie tea were sold as tea, you would consider it a fraud?—Certainly I should; I should not consider such a man would sell it above twice or thrice at the utmost.

2036. Viscount *Goderich.*] I understand you to say that, in your experience, you have never been asked to supply any retail dealer with anything except pure teas?—Never.

2037. And that also you do not believe that retail dealers in the country ever do sell anything but pure tea?—I think not; I hope not.

2038. That latter statement must, of course, be merely a matter of pure opinion?—Certainly.

2039. All you really are able to speak to of your own knowledge is, that your customers in the country have never applied to you to sell them any bad tea?—Not any spurious tea; I have been written to for a chest of common tea, as any other house may be. I can assure the Committee that at the present time a low-priced article is very little sought after.

2040. Their not having applied to you to sell them spurious tea may have arisen from their knowledge of your character, and their belief that you would decline to send them such an article?—I certainly should decline to send them a spurious tea.

2041. Mr. *Kinnaird.*] What class of the community should you say was the largest consumers of tea?—I think the working people.

2042. You have no hesitation, as far as your information extends, in saying that they are supplied with a genuine article?—I think, certainly, they are; from the nature of the business which I do, and the tea I sell to my country buyers, I think they generally get a very good article.

2043. Do you really think that a poor washerwoman who buys her two penny-worth of tea is a judge of the tea which is given to her?—I think a washerwoman is, certainly.

2044. Mr. *Villiers.*] What is the extent of your dealings?—I do not profess to be one of the largest dealers, but I think I pay to the revenue upwards of 40,000 l. a year duty.

2045. Mr. *Moffatt.*] Your firm are in the habit of employing representatives in various parts of the kingdom, are they not?—We have four.

2046. Travelling through different parts of the kingdom, who would be, I presume, almost certain to hear in the various towns they visited if there were any practice of selling adulterated tea?—I think I should have heard of it long ago from those representatives.

2047. Those representatives being in the habit of conversing freely with the representatives of other houses who vend tea?—Yes; I certainly think it would have been discovered.

2048. Viscount *Goderich.*] Have you ever asked those representatives whether they had heard of such a thing as adulteration?—I never did.

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2049. *Chairman.*]

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2049. *Chairman.*] You never heard of the adulteration of tea taking place till this Committee was first appointed last year?—No.

2050. With 30 years' experience in the trade, it came upon you as an entirely new thing that tea was extensively adulterated in this country?—Yes.

2051. Mr. *Moffatt.*] You are in habits of intimacy with other members of the tea trade; is it your opinion that if 20 or 30 of the principal dealers came before this Committee they would have any other information to give upon the subject than you have given?—I do not think they could.

2052. Mr. *Villiers.*] They would not say they sold tea themselves which was not good?—No. I have reason to believe that every wholesale dealer like myself conducts his business openly, fairly, and respectably. I am in the habit of seeing most of them very frequently.

2053. When you say you only heard of it last year, had you ever heard of a public inquiry into the adulteration of food and other necessaries before?—No.

2054. Mr. *Peacocke.*] You say you would refuse to sell spurious tea if asked to do so?—Yes.

2055. You would consider it incompatible with your respectability to sell lie tea?—Yes, and every respectable house would do the same; I think it is an insult to ask a respectable house to do so.

2056. You do not consider those firms respectable which do sell lie tea?—Certainly not.

2057. Mr. *Villiers.*] You cannot probably tell us how much lie tea is imported now?—I do not know; it would be put up at the public sale; I have seen it put up and refused over and over again.

2058. Is not it likely that it will be put up to public sale in future?—Certainly not.

2059. When it is, it is not taken, you say?—No, the trade do not want it; they would have been very thankful if it had never come to this country at all.

2060. Mr. *Wise.*] How is it entered at the Custom House; as manufactured goods or as tea?—As tea: it pays duty as tea.

2061. Do the Custom House officers know that it is not real tea?—They say that that is not their business; the Custom House officers say if it pays the highest duty out it goes.

2062. Do you think that is very beneficial to the public morals?—Certainly not; I think the Government should take care of the public morals, and if their Custom House officer saw that tea I think it was his duty to stop it instantly.

2063. Mr. *Kinnaird.*] Has there ever been any remonstrance with the Government upon the point from the dealers in teas?—I cannot say of my own knowledge.

2064. The tea dealers sold it like any other article, as it came certified to them by the Government?—It was put into their hands to be sold, and it was open to a dealer to purchase or not as he thought proper. A man goes with his eyes open, and there it is before him.

2065. Do you mean the retail dealer went with his eyes open?—First of all the wholesale dealer goes with his eyes open, and then the retail dealer comes to him to buy. The retail dealers have now become such good judges of the article, that almost all of them taste for themselves.

2066. The only persons who have not their eyes open are the consumers?—They soon find it out.

2067. Mr. *Villiers.*] Do you know if the Inland Revenue objects to the duty being paid upon lie tea?—No; they would take money for anything.

2068. Mr. *Gregson.*] Is the same duty paid upon lie tea as upon any other?—Yes.

2069. Mr. *Wise.*] Would not you think a proper system of inspection very desirable?—No; I do not think we want any inspection.

2070. How would you prevent the importation of lie tea?—It does not pay for being brought to this country; it is like everything else; it will have its day, and there will be an end of it.

2071. Mr. *Kinnaird.*] You said just now that the Government ought to be conservators of the public morals; but if there is to be no inspection, how is the Government to undertake that duty?—I say, let us take care of ourselves.

2072. *Chairman.*]

2072. *Chairman.*] In carrying that plan out, does not it appear to you that a good deal of injustice might be inflicted upon the public. You say, let the public take care of themselves, and if a man sells lie tea for tea, he is not to be punished, or if he sells sloe leaves for tea, he is not to be punished?—I would say, let him be punished by all means.

2073. Mr. *Villiers.*] You do not object to the consumer proceeding against any man who has deceived him in the article he has sold?—Certainly not.

2074. You must have a law for that purpose?—That is for the Legislature to decide.

2075. Viscount *Goderich.*] You would not individually object to such a law?—If you could point out a good law, I should not object to it.

F. Grace Calvert, Esq., called in; and Examined.

2076. *Chairman.*] YOU are a Professor of Chemistry, I believe, at the Royal Institution in Manchester?—I am. F. C. Calvert, Esq.

2077. Whilst in that position, your attention has been called frequently to the question of adulterations, both in articles of food and in drugs?—Yes.

2078. Will you state to the Committee in what way you have been concerned in the examination of adulterations of either of those things?—I have several times been called upon, as a chemist, to inquire into cases of adulteration taking place among tradesmen in Manchester; and also I have been often called upon to examine the quality of various products used in large chemical works. Besides that, I have had my special attention called to the question of the adulteration of food as supplied in large contracts to public establishments. Eight or nine years ago, I was induced to inquire into the quality of the food supplied in several of the unions of Lancashire, and by one of my friends, who was a guardian at that time, I obtained samples from five or six unions. I examined those samples, and I will now state the general results at which I arrived, without entering into details. The articles I examined were the following: Wheat flour, oatmeal, soap, butter, moist sugar, and bread. I found that in the wheat flour, which was taken from six of the unions in Lancashire, the average adulteration went from a pure article to 74 per cent. of adulteration.

2079. What was the nature of the adulteration practised in wheat flour?—At that time it was principally potato starch and maize, but the adulterating article used for mixing with flour varied with the price in the market. At the present time probably rice and maize would be used. I may perhaps also observe that in those samples which I examined, not only was the article adulterated, but in one or two instances the flour was unsound, which was, in the case of a public contract, a very serious consideration.

2080. Mr. *Wise.*] You are aware that in mixing Indian corn with flour the miller or baker is not actually breaking the law?—I am aware of that.

2081. You are probably aware that he may sell this, provided he mentions at the time that he is selling a mixed article?—Yes; but in those cases I do not think that the miller or the contractor stated the fact that it was adulterated; and as I am upon that point, I may relate a fact, which I think is important to be stated. I have been several times requested by poor people in Manchester, and even by the police of Manchester, to examine samples of flour which have been taken to the police as being unsound. I have examined those samples, and have never found anything which might be considered injurious to health; but I have found in some instances such a great quantity of rice or maize mixed with the flour, that the flour lost the power of rising; it interfered so much with the property of the gluten and its rising by heat, that the poor people could not make bread with it. In other instances, where the flour was apparently good flour, the wheat had undergone deterioration, and the gluten had lost the power of rising, so that not only you could not make good bread with it, but when it was eaten, it was an unwholesome bread. When I found those facts, I reported them to the superintendent of police. The law, such as it is now, has prevented the police from prosecuting, though the party who had bought this was undeniably defrauded.

2082. *Chairman.*] In what respect was the law inapplicable to such a case?—As far as I can understand it, if I could have found in this flour a substance

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*F. C. Calvert, Esq.* mixed with it susceptible of injuring the health of those who would have eaten it, the party would have been subject to a penalty; but the law does not appear to give the power to the police of prosecuting if the flour be unsound in quality, or mixed with anything like rice, or maize, or potato starch.

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2083. That is, provided it is sold as a mixture?—Yes; but it is not sold as a mixture.

2084. The law would reach those who sell bread made of this mixture, unless they themselves announce it to the public as being a mixture?—I am only giving my information. With respect to the flour I have spoken of, I examined the supplies of flour which were sent in, during 12 months, to one of the unions in Lancashire. The results were, that out of about 60 or 70 analyses, the quality of the flour sent in by the contractors constantly varied. The quality of the flour sent in not only varied in point of the addition of rice or maize to the flour, but it varied enormously according to the quality of the flour itself; that is to say, a person can buy at Liverpool injured wheat, which has been wetted during the passage, and had been what is called kiln-dried, and these unwholesome wheats coming into the hands of the miller, he will mix them with a certain quantity of good wheat, and sell this flour at a low rate. It is impossible to detect this by the touch or the eye, and it is quite impossible that the governor of a workhouse can detect such instances of inequality of food.

2085. *Mr. Gregson.* When you did detect it, was the contract cancelled?—No; not only the quality of this flour varied enormously, but in some instances the condition of the gluten injured the whole of the paupers in one of the unions; the whole of the paupers had diarrhoea, and it was found to arise from eating bread which was made from flour the gluten of which was injured; and the consequence was, that the bread, if kept only a short time, became mildewed, and the paupers who ate some of that bread had diarrhoea during the time of consuming this flour. I have the certificate of the medical man of the workhouse at the time when that took place.

2086. *Mr. Moffatt.* Does the law give no redress against the vendor of such flour?—Perhaps the guardians, if they had thought proper to take steps, might have done so.

2087. Is not it their duty to protect the paupers against the consumption of bad flour?—I can only say that it is not known if they have the power. I am, however, only stating facts, and not intending to advert to the means of prevention.

2088. *Mr. Wise.* Will you, shortly, state to the Committee facts with reference to the case you visited at Uttoxeter a few days ago?—In that case some samples were brought to me by the superintendent, requesting me to state to him if the samples were wheat flour, and if they were not, if I would state what they were composed of. I found they were pure ground rice.

2089. What is the effect upon flour of mixing rice with it?—Flour, to make a good bread, should contain a certain per-centage of gluten; if the flour yields only 25 per cent of wet gluten, you cannot make good bread with it without taking artificial means, such as alum or carbonate of ammonia, or some other drug; you cannot adulterate to a very large extent the English flour; it yields 26 to 27 per cent. of this gluten; but by importing Odessa wheat, or wheat coming from a warmer climate than ours, which yields 35 to 36 per cent. of gluten, they can adulterate it to such an extent as to bring down the gluten to 26 per cent., but if they go beyond that, bringing down the gluten to 19 or 20 per cent., the gluten will not have enough expansive force to expand under the influence of heat, and make a loaf of wholesome bread.

2090. What did the magistrates do in that case?—The millers were condemned to pay a fine of 10*l.* each.

2091. The millers were found guilty of selling an article for flour which was not pure wheaten flour?—Yes, and they were fined 10*l.* each.

2092. *Mr. Kinnaird.* You have not stated what you believe to be the effect upon the stomach of bread largely adulterated with rice?—It would not be nearly so nutritive.

2093. Would it have a deleterious effect?—Not beyond this; that the water would not well work in the bread, the bread therefore would retain more water than it ought to do, to be a wholesome bread. I have here two specimens (*producing the same*) of gluten, one of a good gluten, and the other of a bad one.

2094. What

2094. What quantity of flour produced this amount of gluten?—It weighed 100 grains when in the moist state; it could be extracted from 300 grains of flour. I found that the bread which was supplied to the unions in Lancashire contained an undue quantity of water. It is a well-known fact, that bread should not contain more than 40 per cent. of water, and if bread contains more than 40 per cent. it becomes exceedingly liable to decay. To show the Committee the importance of the statements I am putting forward, I will mention that some few years ago, several of the French regiments in Paris were affected with diarrhoea; the French Government appointed a committee to examine the case; it was found that the bread contained a great quantity of water; the bread underwent decomposition rapidly, and when it was examined by the microscope a large quantity of cryptogamic plants were discovered in it. In the unions of Lancashire the large quantity of water in the bread must be considered highly objectionable, principally to the paupers, and it would be the same for prisoners, because those people are all on a limited amount of food; the amount of food they receive is the lowest quantity which will maintain health, therefore anything which tends to decrease that, is a decided disadvantage to them. The average quantity of water I found in the bread in Lancashire workhouses, amounted to from 56 to 59 per cent., 18 per cent. more than is recognised to be the real proportion which bread should contain.

2095. *Mr. Peacocke.* To what do you attribute the presence of this excess of water?—To the bakers wishing to get a better profit.

2096. How do they accomplish it?—By mixing more water in the flour.

2097. There is no substance added for the purpose?—It is not necessary that there should be.

2098. *Mr. Swift.* Is it effected by the different mode of mixing?—It is owing to the way of working the flour; the baker can work more or less water in his bread.

2099. Without the use of any other ingredient?—Yes.

2100. Would not the baking affect that, to some extent?—If the baker has his oven very hot indeed, and puts his bread in and lets it remain in a short time it gives it a coating and the water inside remains.

2101. *Mr. Wise.* The application of potato or rice enables the loaf to hold more water, does not it?—Rice and potato would have that effect; I am not prepared to state what the fact is as to maize.

2102. Do you say that the baker, after the loaf has been put into the oven, glazes it over with some material to make it retain its dampness?—No; what I mean to say is, that the outside of the loaf is baked quickly.

2103. You mean that there are several ways of baking; that one mode takes out all the dampness and another retains a great portion of the dampness?—Yes; that is why bakers are in the habit of adding potato and rice flour. It pays the baker to employ potatoes which shall be at the same price as wheat, because the potato flour will enable him to work in a larger quantity of water into the bread. The way it is done is this: they do not buy potato flour, but they buy potatoes; they boil them and work them with water, and instead of adding water to their flour they add this potato mixture, this potato flour having the property of retaining a large quantity of water.

2104. So that where bread is sold by weight it assists a fraudulent intention?—It goes towards it.

2105. *Mr. Peacocke.* Is it easy to detect the presence of this excess of water by the eye?—Not at all.

2106. Can you state any easy test by which it may be known?—By taking a certain weight and putting it on the hob and letting it dry thoroughly and weighing it again.

2107. You are aware that bakers are in the habit of mixing rice flour with other flour for the purpose of improving the colour, as they say?—I think it might improve the colour a little, but that is not their purpose, I think; alum will do that for them; alum will make bread white and it will make the gluten work. When the gluten is injured to a slight extent, by adding a certain quantity of alum it will enable the gluten to work. The next article that I have examined is milk. I found that the milk which is supplied to five or six unions in Lancashire is milk which has been partially creamed; they have removed a part of the cream, and then they have added, as a rule, from 10 to 15 per cent. of water to the milk. The contracts are, that they shall furnish to the workhouses new milk.

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*F. C. Calvert, Esq.*

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*F. C. Calvert, Esq.* milk. Instead of that they allow it to stand a certain number of hours and take off a portion of the cream and mix the milk with from 10 to 15 per cent. of water and then supply it to the unions. The pauper, therefore, does not receive the quantity of food he is expected to receive by the regulations which have been established for his feeding. I never found anything else but water in milk.

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2108. No chalk?—No, nothing but water; that is the cheapest and most practicable adulteration which can be found. The next matter is oatmeal. I have found oatmeal, generally speaking, in fact always, mixed with rice and maize, to bring down its price. Besides the samples of those five unions, I have examined 40 or 50 samples of oatmeal, and none of them have I found to be pure and genuine oatmeal. The effect is this, it makes less porridge; in other words, it is a direct loss to the ratepayers, because the cook in the workhouse must use a larger proportion of this adulterated oatmeal to make a certain quantity of porridge than if it is pure oatmeal.

2109. *Mr. Gregson.* Is rice much cheaper than oatmeal?—It depends entirely upon the state of the market; generally speaking, it is so.

2110. It is not so nutritious as oatmeal?—No. I believe the great evil of the present day, is not so much the extraordinary cases of adulteration, as the tendency, through competition, to lower the quality of the article; mixing it with a cheaper article, so as to bring down its price, to tempt the buyer. In doing so, very often, from the want of sound knowledge, the quality of the article is so lowered that the party who sells that article, has completely destroyed the nutritious power of it. This is very forcibly seen in Manchester. We have an immense population, flour is ticketed at a certain price, and where poor people think they can get a pound of flour cheaper at one shop than another, they go and buy that cheaper flour. The next day the man's competitor lowers his flour a halfpenny, and that goes on to a great extent, till really the working man suffers enormously from the lowering of the quality of the material by competition.

2111. *Mr. Moffatt.* They lower the quality of the material in order to supply it at a lower price?—Yes.

2112. *Mr. Swift.* Are the supplies to workhouses in Lancashire obtained by means of public tender?—Yes.

2113. Are the guardians in the habit of taking the lowest tender?—Generally speaking.

2114. Without regard to quality?—If the two articles appear to be of the same quality, the lowest price will of course command their attention.

2115. Are they sufficient judges of the articles which are brought before them, in your opinion?—I should say not, generally speaking. The present means of adulteration are so perfect, that the usual means of detecting adulteration are beyond their reach. They have only three organs to detect it with: they have the eye, the taste, and the touch; but those means are not sufficient at the present day. Millers can bring to bear such perfect means of grinding as to deceive the eye, the touch, and the taste. Therefore you must go a step further to discover this adulteration.

2116. Do you think that the introduction of the microscope would have the effect?—I think the microscope and chemical tests are the means to overcome those adulterations. After a person has contracted for an article, the only person who has anything to do with accepting those goods, is the governor of the workhouse. As the governor of the workhouse has a great number of duties to fulfil, and it cannot be expected that he shall be a chemist, and shall spend the whole of the day in examining flour or any other article, therefore he is obliged to trust to the contractor to supply the article contracted for; and admitting that he does not supply the article contracted for, the governor has no means of proving the fact. Contracts are made at the present day by simple denominations; that is to say, the Manchester workhouse contracts for so many sacks of best seconds flour, so many firkins of butter, so many boxes of hyson tea; all those are mere words.

2117. Do not you think that to a body of tradesmen who are about to tender for the supplies of a workhouse, if they have a prior knowledge that the guardians generally take the lowest tender, it is almost an inducement to deteriorate or adulterate the article they are about to tender for?—I think so; I think also the knowledge that there is nobody to ascertain what is the quality of the supplies, and also the knowledge that the parties who are called to do

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so are not able to judge, and that it is impossible to force a man, according to the present mode of contract, to keep to a given quality, are all inducements. The quality of best seconds flour, for example, may vary very much; still, it would be called best seconds flour. What I think is, that the contracts should be made according to several standards; that there should be a standard of best seconds flour, for instance.

2118. The guardians, probably, in that case, would not be able to detect whether it is the seconds quality?—I think there is an officer wanted for the purpose.

2119. *Mr. Wise.* You think the adulteration is so skilfully carried out as to require science to counteract it?—I may state, that my position is such, that I would, on no consideration, accept anything connected with this food question, and therefore my evidence is quite unbiassed with respect to any object which I may be supposed to have in view. The next article I shall call your attention to is butter. The quantity of water and salt that such an article as butter should contain is  $2\frac{1}{2}$  per cent. of salt and 10 per cent. of water. In the butter supplied to those unions, the quantity of salt varied from 2 per cent. up to 14 per cent., and the quantity of water from 10 to 15 per cent.

2120. What is the effect in that case?—It is very disagreeable indeed to have butter with 10 per cent. of salt in it.

2121. It is not injurious to the constitution?—Not the least.

2122. Deception, therefore, would be practised for the sake of profit?—Yes; I have also found that the soaps supplied to workhouses vary considerably; the quantity of water in soap is sometimes very high indeed.

2123. What is the standard which you take for soap?—Thirty-two to thirty-four per cent. of water; many soaps supplied to the workhouse went up to 58 per cent. Moist sugar I have generally found pretty pure.

2124. *Mr. Moffatt.* Tobacco?—That is very little consumed in workhouses; I have examined several samples of tobacco for the Excise; I examined every article which came into the unions, such as tobacco, sugar, sago, soda, snuff, stone blue, and starch, and the total number of analyses I made, during 12 months, amounted to 289; in 138 of those, I detected adulteration or bad quality.

2125. *Mr. Swift.* Are you acquainted with the actual value of the articles supplied to workhouses?—I am not at the present time; I was at the time that I made the analyses.

2126. I suppose you were informed of the prices at which they were supplied to the workhouse?—Yes.

2127. Do you think the tradesmen who supplied them could have supplied the genuine articles at the prices at which the tenders were accepted?—In some instances they would have been able to do so. I will take flour, for instance; a tender was offered to supply the workhouse with the best seconds flour at the market price of the day; it might be a great loss or a great gain to the contractor, according to the state of the market; the contract was made at the price for the time being; therefore, in that case, undeniably, the fraud was to the detriment of the ratepayer and of the pauper, and to the benefit of the contractor. In the case of milk, I think, if they had required pure milk, the tender must have been slightly higher; but as neither the governor nor the guardians were able to detect whether that milk was genuine or adulterated with a certain amount of water, they took that tender which appeared to them the cheapest, recommending to the governor to see that the milk was maintained of an average quality.

2128. You think several of the tenders were taken at prices at which a tradesman could not have supplied the genuine article?—In many instances I believe it; there is one paper which I should like to place in the hands of the Committee for their consideration. I calculated, taking the average quantity of milk which was supplied in one of the unions, the amount would be 4,607 *l.* Supposing there to be 13 per cent. of adulteration, the loss to the union was 664 *l.* Taking the supply of flour at 3,278 *l.*, and supposing an adulteration to the extent of 29 per cent., the loss to the union would have been 959 *l.* But the flour being adulterated with articles having a commercial value, I deducted the value of the articles used for the purpose of adulteration, and found it would amount to 183 *l.*; the result was that on a supply to the extent of 14,629 *l.*, the loss to the union would be 2,271 *l.*

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2129. *Mr.*

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2129. Mr. Wise.] Independently of the loss of health to the parties who consume the articles?—No doubt.

2130. Mr. Moffatt.] Is not that calculation based upon the assumption that you would have got a perfectly pure and genuine article at the same price at which you obtained the adulterated article?—No; in the case of milk the figures must be subject to some correction; in the case of flour, however, my figures remain quite true; and also in the case of most of the articles.

2131. Mr. Swift.] Do you mean to say that you obtained flour and other articles, which you analysed, genuine, at prices which were not higher than those which the tradesmen tendered to the several unions?—Yes; when I took those standards I did not go and buy a magnificent fine flour, but I purchased several samples of the best seconds flour; I took them as a standard, and it is upon that standard that my figures were based.

2132. Did you tell those tradesmen of whom you bought those samples, that you wanted them in order to give evidence upon them at a future time?—No; I always employed an intermediate party; and there was no idea at the time that they were for the purpose of analysis.

2133. Do you think if parties had received orders for those goods at those prices, the bulk they would have supplied would have been equal to the sample you obtained?—Yes; instead of contracting by simple denomination, I think it would be better if you were to contract for an article containing so much gluten, which would rise to a certain height, admitting of a certain amount of adulteration (for there is scarcely any flour without a certain amount of adulteration); I would say to the contractor, "We shall want so many bags of flour according to this standard, giving you a certain limit of value in the adulteration and in the rise of the gluten; but where it goes beyond the limit at which it will be fit for making bread, we will reject the article." Generally, dealers in articles know to a great nicety what the quality is.

2134. Chairman.] Have you made any examinations of drugs?—I have; 12 months ago I requested the Sanitary Association of Manchester to procure for me samples of drugs from 12 shops in Manchester, six of the most honourable, and six of the lowest shops; from 14 shops I obtained 14 different samples of drugs; the result of my analysis was that they were adulterated, at all events that they were not of that purity which the Pharmacopœia of England requires drugs to be: for example, muriatic acid, instead of having the required strength, would sometimes be much weaker, and sometimes stronger; it would contain a large quantity of various elements which the muriatic acid prescribed by the Pharmacopœia should not contain: so as to nitric acid, the same rule applied; the same rule applied to the solutions of ammonia, to oxide of mercury, to chloroform, to strychnine, and to sulphuric ether.

2135. In all those cases do you mean to say that you found those articles inferior to the standard of the Pharmacopœia?—I found the greatest part of the substances which I analysed were not of that purity which the Pharmacopœia of England requires the drugs to be: and often, if the article were a dear article, such, for instance, as ether, I found it diluted; if the article was sweet spirits of nitre, I found it containing prussic acid; I found it containing nitric acid, and therefore not at all in the prescribed condition that it should have been, according to the Pharmacopœia of England.

2136. The Pharmacopœia, I suppose, does not lay down any rule for the manufacture of these different compounds which it is not perfectly easy for the manufacturer to adopt?—Certainly not.

2137. The Pharmacopœia does not expect the standard to be perfectly exact?—No; but it expects the article to come near it. By not purifying these articles, the manufacturer can sell them cheaper to the chemist and druggist, and the chemist and druggist buy the articles at a cheaper price.

2138. Mr. Gregson.] Many of those articles are not impure, but reduced in strength, are they not?—Yes, or of a low quality; the quality of the drugs in this country is far inferior to the standard which it should have. There are some instances in which the adulteration is intentional, but it is very rare; the workmen are very apt, in our districts, to take cream of tartar, and I have known cream of tartar to contain from 25 to 75 per cent. of gypsum. I think an inspector of pharmacy is also necessary, so as to maintain the quality of the drugs in chemists' and druggists' shops.

2139. You have had some experience in France?—Yes.

2140. You

2140. You received a portion of your education there, did not you?—I spent 12 years there, during seven of which I was under the French Government as a chemist. F. C. Calvert, Esq.  
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2141. Will you describe to the Committee the state of the law in France as to chemists and apothecaries?—The shops of the chemists and druggists in France are every year inspected. In Paris, there is a College of Pharmacy where education in pharmacy is given. There are various professors in that College. Every year there comes an order from the préfet of police, ordering that certain of those gentlemen shall be appointed as inspectors; they go round to all the shops, and inspect the drugs. If the drugs are found of bad quality they are seized, and the man is subject to a certain fine; if he does not pay the fine, or disputes it, the case goes before the court, and he is, generally speaking, condemned, there being these three or four gentlemen who are called on to give their evidence. If the party does not pay attention to the first and second notice, very often they will take away his diploma. In the provinces, the Government proceed in a different way; the préfet appoints two or three gentlemen, one from Paris, and two from the country, and those gentlemen go through and examine the shops in the district, being paid, of course, for their labours.

2142. Are the adulterated drugs which are found destroyed?—Always. The grocers' shops are always examined; there is a Conseil de Salubrité, some of the members of which go round and inspect the grocers' shops.

2143. Mr. Moffatt.] What are the consequences of inspecting the grocers' shops?—That very often a quantity of food which has been lowered beyond a certain limit is seized.

2144. Mr. Gregson.] What is the punishment inflicted?—Generally speaking, fine and destroying the article.

2145. Mr. Moffatt.] How many of those fines and burnings take place in the course of a year in Paris?—I should say that they never burn the goods; they are destroyed.

2146. How many fines are inflicted in the course of a year?—They are very heavy; I can say that they are very numerous from my own knowledge. I have, as a chemist, been called on in several instances to defend parties.

2147. Chairman.] What is your impression as to the effect of those regulations of the French Government upon the shops of chemists and druggists and apothecaries in France?—There has been a great improvement. If you were to inspect the quality of drugs in this country and in France, you would be astonished to see the difference.

2148. You think drugs in France are much purer than those which are sold in this country?—Yes. There is no fixed period for the inspectors to come; the parties never know when to expect them.

2149. Mr. Wise.] Is that an old arrangement of the French Government?—I can speak to 20 years.

2150. Chairman.] It is your opinion that, supposing the same system of inspection in this country were to be authorised, either on the part of the local government, or a central body, it would be very beneficial in enabling us to purchase pure drugs, where we now get impure ones or adulterated ones?—A very great benefit in every respect, because it is of most serious consequence to a medical man, not to know the quality of the drugs he uses, and as long as there is no inspection, and the chemists compete one against another, they will be careless, and there will be but little security.

Mr. Reginald John Richardson, called in; and Examined.

2151. Chairman.] YOU are the Officer of the Local Board of Health at Newton Heath, near Manchester?—Yes.

2152. Does Newton Heath join Salford and Manchester?—Yes.

2153. Can you give the Committee any information with regard to one particular article of provisions, meat?—Yes.

2154. How many slaughter-houses have you in your district?—We have 13 slaughter-houses in the ordinary way, and till recently, when I first came into office, there were seven where they slaughtered slinked beef, now there are but three.

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2155. What is slinked beef?—It is a class of meat obtained from cows which are diseased and unfit for human food. The animals are subject to various diseases. Some are called ticked; some have the milk fever; some have worm-ith-tail; some are graped; others are broken-up old cows.

2156. How many of those slaughter-houses for this diseased meat are there in your district?—There are three now.

2157. Have you been in the habit of visiting those places?—I visit them every week, more or less.

2158. Can you state what you have yourself seen?—I am in the habit of going as a sanitary inspector, and taking with me the inspectors for Salford and Manchester, both being practical men. We co-operate together and enter the slaughter-houses, examine the carcasses as they hang up, or as they may be lying about. The opinions expressed by my sub-inspectors are those upon which I rely, they being practical butchers, and men well skilled for periods of 10 or 20 years. I find, upon their word, that it is necessary to seize carcasses whether they be whole or in pieces, and condemn them, as far as my judgment goes, relying upon theirs for the prosecution of parties in whose custody the meat is found. I then apply to a magistrate for an order to destroy. We destroy the food in the best manner we can; sometimes we destroy it by fire, sometimes by tarring it over.

2159. Have you formed any estimate of the number of diseased animals which are slaughtered in your district?—At the present time I should say there are in Newton alone about 12 cows, and probably from 24 to 25 calves, in a week.

2160. That is in Newton Heath alone?—Yes; in Manchester and Salford there are considerably more.

2161. In what condition are the animals when purchased?—They are diseased, having various diseases peculiar to cows.

2162. What is their appearance when they are slaughtered?—They present various appearances, but generally we find them soft, flabby, full of matter; that which should be fat is soft, pussy matter, disgusting to look at.

2163. Are the poor who purchase this diseased meat competent to judge by the appearance of the meat that it is diseased?—No; for this reason, that the meat is often disguised. It is sold very often to them in various forms. A cow when cut up sometimes presents a hard appearance, and sometimes a soft appearance, and sometimes hard and soft in the same animal; if they find any pieces of hard flesh, they sell that as ordinary joints on the stalls, but the softer portion they convert into sausage meat, into polonies, into savory ducks, or saveloys, or German sausages, or collar'd brawn; in fact, in every way they can disguise it. It is frequently seized on the stalls, but seeing we are so very vigilant in that particular, they now resort to the method of disguising it, and selling it to small shopkeepers, who give credit to the poor, and who are obliged to get it from them. In this manner the poor have this food foisted upon them, when they otherwise would purchase good food, if they had the money to purchase it with in the common market.

2164. It is your opinion that this is purchased not so much in the ordinary state of meat exposed in butchers' shops as in the shape of sausages?—Yes, and collar'd brawn, saveloys, and things of that description.

2165. Mr. Gregson.] You stated the number of diseased animals killed in the week; what is the number of sound animals killed in a week?—We have 13 slaughter-houses, all of good character, where from 10 to 20 cows are killed in a week.

2166. Mr. Peacocke.] Do you mean that those three carry on a trade openly and avowedly in diseased animals?—Nothing else. I might, in fact, reduce the three to one, seeing that the other two, when they have a diseased cow, send it to the one butcher.

2167. You are an inspector?—Yes.

2168. Who appoints you?—The Local Board of Health.

2169. How many of you are there?—There is one to a district of about 10,000 inhabitants; but I take other persons with me.

2170. Mr. Swift.] Are they practical butchers whom you take with you to examine the meat in these places?—They are authorised inspectors for the Corporation of Manchester and the Corporation of Salford; originally they were butchers of 10 or 20 years' experience.

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2170. They are not now in business?—No; not as butchers.

2172. Chairman.] What is given for those diseased animals?—Thirty shillings to 2*l.* each; they sell the hide, which they consider a sort of perquisite, to pay them.

2173. Is there any other meat used in the manufacture of the sausages you speak of?—Yes, there is veal; they cannot use beef altogether for sausages, it makes them too red; they will not pass for pork sausages without veal being mixed with them. They resort, therefore, to slinked veal, or what are called "tibbies," or "staggering bobs."

2174. What is the effect produced upon the public health by the consumption of this kind of food?—The medical men in our neighbourhood state that they are satisfied in their own minds that the slinked meat sold in that neighbourhood is productive of many diseases which are common there, particularly diarrhoea and scorbutic complaints. There is one class of disease called the ticked animal that is supposed to be contagious, and knowing as we do the powers of vaccination, it is thought that the virus from animals that are ticked will extend to the human frame.

2175. You have had some experience in attempting to put down this dealing with bad meat; have you prosecuted parties?—Yes, several.

2176. In what way do you carry on your prosecutions; do you take them before a magistrate?—Yes, after obtaining an order to destroy we summon them before a magistrate. The law gives the magistrate power to fine them 10*l.* for every piece of meat. According to the law, in Manchester the fine is only 40*s.*; in Salford it is 10*l.* We have driven them out of our district by this 10*l.* penalty.

2177. Mr. Wise.] After those convictions do the public still continue to consume those extraordinary articles?—Yes, they purchase the meat.

2178. Do the consumers of this peculiar character of food go to the same shops after convictions have taken place?—I am sorry to say that they do; when they see me seize a cow they vent their execrations upon the butcher, and yet they support that very class of men by going and purchasing the food.

2179. So that though they are cautioned they still go to the same shops to buy those articles you have mentioned?—Yes; they are forced to go by the system of credit.

2180. Chairman.] Do those men pay the fines and go and open their shops again?—They go to gaol, and the other butchers who deal in slinked meat will make them an allowance while they are in gaol.

2181. Mr. Wise.] The real cause you presume to be, that many of the lower classes are so poor that they are obliged to go to those shops?—Yes.

2182. Chairman.] You look upon the present state of the law as very unsatisfactory?—The law at present is very vague and indeterminate. Whenever we bring a case before the magistrates, we point out the defective state of the law. Mr. Taylor and Mr. Dale, my two sub-inspectors, have conversed with me, and we have agreed to what we consider the only method by which we can put it down. We propose to recommend to your Committee that there should be first of all the power given to some central Board to test or analyse the portions of those animals which we may have doubt about. The magistrates, when we produce anything of that kind, put us to our oaths whether we think it is unfit for human food; whereas, if we had a chemical analysis to lay before the magistrates, I think it would do a great deal to put it down.

2183. What do you mean by a central authority?—It cannot be expected that a sanitary inspector can have a knowledge of chemistry sufficient to analyse animal food, therefore some great authority should be constituted.

2184. Do you mean a central authority in London?—Yes, under the Board of Health, with provincial Boards in the large towns; something on the principle on which the country is divided into bankruptcy divisions. I could then seize an animal, and take portions of it to this provincial Board. Another thing which we consider necessary is, we think we ought to have the power to enter upon railways, into railway carriages or trucks, or warehouses, where property of this kind is being in transit. For example, last week 24 pigs were seized, all in a rotten state, in a warehouse in Salford by the authorities; they had scarcely power to do that, but they did it, for the pigs were really a public nuisance. Again, we think we ought to have the power to enter a stable, or barn, or farm

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buildings. We find that cows are diseased and die, and they send for these slink butchers to come and take them away to market in their carts.

2185. Mr. *Wise*.] You want the same power in fact in relation to all articles of food which is now applicable to bread?—Yes. We can scarcely wait for a search warrant under those circumstances. The animal is lying dead in a barn, and the butcher comes and takes it away in the course of half an hour. We then propose that we should have the power to enter mills; we have no power to do so now. We think also we should have the power to inspect carts and waggons on the highway; they bring the meat in carts covered over, and our present law does not enable us to look into those carts.

2186. Mr. *Gregson*.] In short, you only want the power to inspect either carriages or premises in which you have reason to think there is bad meat?—Yes, and also power to take cattle which are being driven upon the highway. Also we should have the power to seize such meat in public markets and fairs.

2187. Is there any other suggestion which occurs to you?—The next suggestion I have to make is, that we should have the power extended, as it is in the Nuisances' Removal Act, to all the constituted authorities throughout the country; for example, there are many out villages round Manchester to which we have driven those people by the severity of our inspection, but we have not the power to follow them there.

2188. Have not you the same power which you have in Manchester or Newton Heath?—No; they have not Local Acts, nor is there any other power except the Court Leet.

2189. Have you any further suggestion to offer to the Committee upon this subject?—No.

2190. Mr. *Wise*.] The Committee understand your opinion to be, that the practice of adulteration and selling bad meat is so extensive, that the public cannot protect itself under the present state of the law?—I do not think it can.

2191. Is there a general feeling in Manchester and the neighbourhood that something ought to be done?—I am sure of it. The moment my name appears in the public papers as having made a seizure and obtained a conviction, the public thank me as if I had performed some great patriotic act. They are all very eager to put it down. A large portion of the working classes unfortunately do not take as much care of their own affairs as they ought to do; but the respectable portion of the working classes really does wish to see it put down. They consider it a very important thing to be observed, that this poisonous food is taken into the stomach not by grains or atoms, but by pounds, and they think therefore a great deal of injury is done to the public health.

2192. Have you known any cases of death arising from the use of this bad meat?—No; but I know cases where butchers have cut their fingers, and the wounds have festered and become very serious, showing what the quality of the meat must have been.

2193. Mr. *Swift*.] If you get a second or a third conviction against one of these men, is the fine which is imposed increased?—The magistrates have the power to inflict a fine of 10 *l.* for every case; but we have penalties sometimes to the amount of 20 *l.*, or 30 *l.*, or 40 *l.*; for it is put upon every piece of meat which is found in that condition.

2194. In that case the man generally goes to gaol?—Yes; he is not a man likely to be able to pay the fine, and he goes to gaol.

2195. What is the length of imprisonment which may be given?—Three months in the case of every penalty which is not paid; so that if there are three penalties, there may be an imprisonment of nine months. The magistrates, I am very glad to say, generally inflicts the highest penalty.

2196. Mr. *Wise*.] Have you heard it stated by medical men that the disease called carbuncle has greatly increased, and that the quality of the food has something to do with the increase?—I cannot speak to that. I should wish that the Committee would undertake to summon some persons of that class who are competent to give a chemical analysis of the bad meat.

2197. Is there any other article unfit for food consumed by the people of Manchester besides the bad meat which you have mentioned?—We have in Newton five knackers' yards, and there is only one knacker's yard in Manchester. The reason is, that they have had so much toleration in Newton, and it has been a source

source of great profit to them, because they have the means of selling the best portions of the horse flesh to mix with potted meats.

2198. Do you mean that horse flesh is used in Manchester in sausages?—Yes. When I go into a knacker's yard and see the hind quarter hung up, I have a strong suspicion as to where it is likely to be taken.

2199. Can you go beyond suspicion; can you state of your own knowledge that horse flesh has been consumed by the people of Manchester?—I can say, for a fact, that the tongues of horses particularly, and the best portions, such as the hind quarters of horses, are generally sold to mix with collar'd brawn, or pigs' heads as they are called with us, and for sausages and polonies. I understand also from those who have been in the habit of making them that horse flesh materially assists the making of sausages; it is a hard fibrine, and it mixes better and keeps them hard, and they last longer in the shop window before they are sold, because otherwise the sausages run to water, and become soft and pulpy. I believe horse flesh also materially assists German sausages; it keeps them hard.

2200. Has this ever been stated in public in Manchester?—When I have my witnesses up in those cases the magistrate frequently asks them questions about it, and the answers get into the public prints.

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*Mercurii, 2<sup>o</sup> die Aprilis, 1856.*

#### MEMBERS PRESENT.

Mr. Scholefield.	Mr. Wise.
Mr. Kinnaird.	Viscount Goderich.
Mr. Peacocke.	Mr. Alderman Cubitt.
Mr. Moffatt.	Mr. Knight.
Mr. Gregson.	Viscount Ebrington.
Mr. Swift.	Mr. Otway.

WILLIAM SCHOLEFIELD, Esq., IN THE CHAIR.

*Thomas Wakley, Esq.*, called in; and Examined.

2201. *Chairman*.] YOU are Coroner for Middlesex, and Editor of "The Lancet" Journal?—Yes. T. Wakley, Esq.  
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2202. In your capacity of editor of that paper especially, your attention has been called a good deal, I believe, to the question of the adulteration of articles of food, and other articles?—It has.

2203. Will you state to the Committee, in general terms, what you yourself have done, in order to show the extent to which you have carried your inquiries?—With regard to the details I have done nothing, but in 1851 I brought into operation a portion of the journal which was denominated the "Analytical Sanitary Commission." The object I had in view was to prevent the practice of adulteration, as far as possible, by the exertions of a single journal; but ultimately, my view was to bring the attention of the Legislature to the subject, feeling thoroughly persuaded that without some legislative authority the practice that was in existence could not be prevented.

2204. In the course of the inquiries which were instituted at your suggestion and under your superintendence, you came to the conclusion, at all events, of a very definite character, that adulteration was very generally carried on, to a very great extent, in most of the leading articles of food, and that it was necessary for the Legislature to devise some means of putting an end to so fearful an evil?—That was the inevitable conviction forced upon me by the details which were elicited. I may state, that I believe adulteration to a great extent has existed for a very long period, and I think I can refer in a great measure the origin of the Sanitary Commission to an incident connected with my own life at a very early period. I was articled as pupil to an apothecary and chemist and druggist, at a principal town in Somersetshire; I think it was in the year 1810 or 1811, or 1810, 1811 and 1812; a practice was carried on in that



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that establishment which struck me as being of a very dangerous character. We had a small wholesale department, and the chief business of that department was to send adulterated drugs to a wholesale house in London; in fact, regularly to supply that house with adulterated drugs. I recollect four things distinctly which were sent in large quantities, verdigris, white precipitate, a preparation called burnt sponge, and annatto. The practice of the house was peculiar; the drugs sold over the counter, retail and for prescriptions, were always of a first-rate quality as far as I could judge, but the articles sent to London wholesale were certainly very vile fabrications. The preparation called burnt sponge consisted of two pounds of prepared charcoal and six ounces of common salt. The verdigris consisted of powdered sulphate of copper and one ounce of acetate of lead dissolved in three ounces of water and then mixed, and the preparation had certainly a very beautiful appearance. The annatto consisted of flag annatto, half a pound; powdered turmeric, three ounces; powdered lime, three ounces; and soft soap, ten ounces. But frequently when there was no flag annatto to be had, an additional quantity of turmeric was put in with some red colour, which I do not now recollect, but often it was sent out without a particle of annatto. The powder for moulding the annatto consisted of eight ounces of whiting and two ounces of Dutch pink. There was a preparation also sent as calomel, which consisted of the white precipitate of mercury, with an addition of sulphate of lime. There is a gentleman now living at Islington, a retired practitioner, who was a fellow apprentice with me; we have not met but once for 40 years; he is now residing at Lonsdale-square, Islington, and being there on Monday, and having been informed that he was in the neighbourhood, I called at his house. I had a conversation with his lady; she said she had heard him mention these adulterations, and the account which I now give the Committee is one which he sent to me yesterday, stating that he had copied it from a memorandum-book of the establishment; and I must say, that in all the adulterations which have come to my knowledge within the last four or five years, I do not know that there is anything worse than appears upon this paper. I believe, therefore, that the quality of the adulterations practised has not become worse, but that the quantity has immensely increased; I am afraid that adulterations which then were of a very partial nature have now become generally diffused, and in fact strike at the very morality of our commercial operations.

2205. Mr. Peacocke.] What is the date of the memorandum you refer to?—The circumstance occurred in 1811 or 1812. This gentleman says, "I find nothing about calomel. This was, I believe, simulated extemporaneously, the chief article being the white precipitate of mercury." There was an incident which made a very strong impression upon my mind. One of the sons of a surgeon of the town called at our establishment for two ounces of burnt sponge, and he made this remark when he obtained it: he said, "We shall not want your rubbish long, for we are expecting our burnt sponge from so and so," mentioning the very firm in London to which we were sending the fabricated article. I believe the gentleman is dead to whom it was sent, but it was an establishment very near to St. Paul's Church. We were absolutely supplying a wholesale house with an article which contained no burnt sponge whatever, and the genuine commodity we were selling retail in the town which was designated by the name of "rubbish." In 1826 or 1827 Mr. Accum's work appeared, entitled "Death in the Pot." The publication of that work brought these things again to my recollection, and I considered, from what I had seen in my youth, that by making known to the world that these adulterations could be practised, without at the same time establishing a system of police for their prevention, the evil would attain an enormous magnitude. I certainly do trace a great increase of adulteration to the publication of Mr. Accum's work; and I believe if your Committee (if I may be pardoned for saying so) were to close this inquiry, and no legislation should follow, the evil would be increased to a magnitude which would be absolutely frightful, because you will show to every dishonest tradesman, without imposing any check, the tricks which can be resorted to in order to make a profit by deceiving his customers. I can assure the Committee that out of doors, as Coroner, I am in the habit of seeing an immense number of tradesmen; and that the result of the Committee's labours is looked forward to with great anxiety.

2206. Can you state at all what is the feeling of such tradesmen, as to whether they would be friendly to any interference on the part of the Legislature to prevent

prevent these practices?—I believe I see about forty tradesmen a day on an average, and every now and then I have had many remarks made to me in consequence of the names of some of them having appeared in our reports in not a very agreeable manner. I believe that the tradesmen generally are most anxious to carry on an honest business, and it strikes me that they would submit to anything in order to get that object accomplished. An honest tradesman now feels that he is placed in a most painful position, in consequence of the dishonesty of some of his neighbours. There is a competition which is very alarming. I say alarming, because it threatens greatly to encourage dishonesty under the present system, and a man feels he cannot maintain his position in trade unless he does what his neighbour does; consequently if his neighbour adulterates, he does so too to agree with him in his prices.

2207. Your opinion is, that a minority of the tradesmen may be what may be designated spontaneously dishonest, but that the great mass of the trade would be fair in their dealings if they were protected?—I believe that is their honest desire.

2208. Mr. Moffatt.] Do you apply that to traders generally, or to the druggists only?—I speak of the whole body of traders. From what I hear of their conversation, my impression is that they are excessively annoyed at the present state of things.

2209. Chairman.] Have you ever considered at all what course it would be advisable to adopt for the purpose of checking this system of adulteration?—I have thought a great deal about it. I have attended to what has been going on in other countries. My only hope is that some means will be adopted to lead to publicity; that is my only reliance.

2210. Mr. Peacocke.] Do you mean in case of conviction?—Even in case of examination without conviction. You have now in operation the scientific department of the Excise. I believe an enormous amount of good would have been done by the Excise, provided there had been publicity in the proceedings they have adopted. I am told there are a great number of cases in which they prosecute, in which there is no publicity given to the facts.

2211. Mr. Moffatt.] Are you aware of the system under which their prosecutions are conducted?—Yes; I am aware of compromises, which are every now and then effected.

2212. Mr. Wise.] Does not that arise, to some extent, from their only looking at it as a question of revenue, and not as one of protection to the public health and morals?—I am afraid so; their proceedings are based on the low ground; the law should take the highest ground, I think, which could be taken, the importance to the public health and public morals.

2213. We have heard something of lie tea being introduced, and duty paid upon it. It appears that the revenue officers permit the importers to pay a duty upon what is called lie tea?—So it is stated. What I think is wanted is rather a light machinery; one which could be very active and everywhere; which could be moving about in every direction. I do not believe it would be necessary to go to any very great expense to accomplish the object; it seems to me that a moderate expenditure would be attended with success; and, generally, I can conceive that if the requisite powers were conferred upon the General Board of Health; that is a Board already existing, and which has not now a great deal to do, and this labour, it appears to me, might be easily engrafted upon it, without the necessity for incurring any very large expense. Then the question arises, in what mode should the Board proceed? Having the requisite officers, it seems to me that purchases should be made by persons in whose characters you could confide, and that when the examinations had been made, penalties should not in all cases follow where there was adulteration, but that the names and addresses of all the traders whose goods had been examined should be published.

2214. Chairman.] Where adulteration had been found, you mean?—In all cases. If you find an honest trader, you should give him the benefit of publicity, just as I did; if he were carrying on his trade with integrity, it would be wrong to withhold from him the benefit he ought to derive from his having, in opposition to undue competition, still resisted the temptation to adulterate his goods.

2215. Mr. Peacocke.] Would you advertise those names and addresses in the papers?—I think they should be regularly placarded in public situations within  
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a certain circuit. I do not know that it would be any desecration to place them on the doors of churches, and chapels too, the entrances to vestry-rooms, and on the outsides of police courts and stations; I would have them in every situation where they would be likely to be seen.

2216. On town-halls?—Yes; sometimes that might be very annoying to some of the town councillors. As the poor suffer so much from these things, they should be placed at the entrances to workhouses. I believe publicity alone of that kind, constantly kept up, without any intermission or rest, without even a penalty, would almost put an end to the practice, provided the officers were entrusted with the requisite powers. They, without doubt, should have the right of entry at all hours between sunset and sunrise, at least, to every place where they had any ground for suspecting that adulterations were practiced. I think without a power of that kind any law would be very inoperative.

2217. Mr. Moffatt.] Would you give that power without a warrant from a magistrate?—I would, certainly; I do not believe there would be any objection raised to it. It strikes me that there is such a desire on the part of tradesmen to get rid of these dishonest practices, that they would submit to almost any inconvenience for the purpose; that is the impression upon my mind, from what has been said to me in the course of very extensive communications with tradesmen.

2218. Chairman.] That power of entering into people's houses would, probably only be exercised in the case of manufacturers; in shops there would be no such necessity, because any person may go in and purchase what he pleases?—Exactly so. Then if adulterations were found of an injurious character to health, penalties might be imposed; but I think there is a great objection to heavy penalties; the heavy penalties of the Excise, I think, have been very inoperative; if the penalties were light, there would be less hesitation in inflicting them, while the disgrace would be equal; and if those things were put, not upon the question of revenue, but on the ground of sanitary considerations, and considerations of public morals, people would feel the shame of being convicted.

2219. Would you recommend that there should be any punishment beyond the imposition of a fine in the case of repeated offences?—A person might be imprisoned after three or four convictions, but it strikes me that it would not be necessary; I think you would put an end to the practice in three or four years, seeing what was done by the little Commission I instituted. I fancy an immense amount of good would result in a very short time from such operations as I have described. I think in the first report on coffee there was but one portion out of 15 of the coffee bought which was unadulterated; in only three months afterwards, when the purchases were made, and it was known that the names and addresses would be published, there were 11 genuine out of 42, showing a vast improvement in so short a time; and the coarser materials upon that occasion were found to be omitted, the adulteration almost entirely consisting of chicory.

2220. During the progress of that system of analysis which you established through the means of this Commission, you of course had to deal with a large number of tradesmen in almost every branch of business, and you published a great number of names?—We did, a great number indeed.

2221. Can you state about how many; as many as 200?—Many more than that; there were 82 reports, and I think the names, on an average, must have been from 20 or 30 in each report.

2222. The greater number of those were persons whom you held up to the world as tradesmen who sold adulterated articles?—It was stated that certain articles had been purchased at their shops; it was not stated who had adulterated, but that the goods were adulterated.

2223. That charge, I presume, led, not unnaturally, to a good deal of ill-will on the part of those whose names appeared in your publication?—I think I made more enemies by the publication of that Commission in six months than I had made in my whole life before, and certainly it was the most perilous thing that a man connected with the press ever did; and so perilous that it is one which I shall not willingly undertake again.

2224. There was one peril you of course ran the risk of, that of being prosecuted at law by some of those persons whose goods you reported on?—Certainly.

2225. After

2225. After the publication of your work, was there one single case of actual prosecution against you?—Not one; there was one prosecution instituted and pursued for some time, but it was ultimately relinquished, and the matter was compromised in this way, that each party paid his own costs; we were to refer the question to arbitration, but there was such a difficulty in finding a competent arbitrator that we were obliged to relinquish it.

2226. What particular article do you refer to?—Cocoa. I had a great number of threats, and a great many tradesmen whom I saw spoke to me when I was on my official duties, some of them feeling that they had been exposed, and they did not regret it, because their neighbours would be exposed as well, and they honestly hoped that it would end in an abandonment of the system of adulteration altogether; but I think I ought to say that the investigations must have been made with the utmost care and the greatest ability by Dr. Hassall and the gentlemen whom he consulted, or it is quite impossible I could have escaped ruin; but I had the greatest reliance upon his integrity; and I must say I had no reason whatever to mistrust him in any act he did. On the contrary, I believe the whole of the inquiries were carried on with the greatest possible fidelity, and all the purchases and examinations were made with the most strict integrity.

2227. Mr. Peacocke.] You have spoken of leaving the carrying out of prosecutions in the hands of the Board of Health; virtually, I suppose, that would involve the necessity of the appointment of an inspector by that body?—I am not sure that the term "inspector" is one which I would employ; I presume the Legislature would give the Board of Health the power of nominating officers whom it supposed to be competent to execute the work.

2228. Those persons, by whatever term they might be called, would be appointed locally by the local Boards; would not you have some fear that those persons locally appointed would be deterred by the fear of local influences from performing their duty?—I should not entertain such a fear as that; I should presume that the parties would be properly selected. I was not directing my mind to the local Boards just now. I was speaking of the General Board of Health in London; but in the case of a local Board, I should very much rely on the medical officer of Health, whom the local Board can appoint. He would be so far independent, as I believe he is by law now, that he could not be removed except with the sanction of the President of the Board of Health in London.

2229. Has not this same medical officer a local practice?—He may not have; but generally speaking he is in practice.

2230. Do not you think if he were to pursue prosecutions in his neighbourhood, it would be calculated to diminish the extent of his practice?—No doubt of it; it would be calculated to interfere with his personal comfort to a certain extent; but I take it he would not be the active party; he would be only the superintending party; he would not be brought into personal collision with the persons who were prosecuted.

2231. Have you had any experience of the adulteration of articles of food except in the metropolis?—Only from what I have heard and read.

2232. In the manufacturing districts; can you give the Committee any idea of the state of public opinion upon the subject?—I cannot.

2233. Mr. Wise.] You recommended just now that the offenders' names and places of abode, and other circumstances connected with the discovery of the offence, should be published in the newspapers and placarded; are not you aware that an Act of Parliament is in existence in this metropolis, and also in the provinces, which enables that to be done?—Yes.

2234. How do you account for the fact that it is never done?—I cannot account for it; it is done occasionally, but very rarely. I understand that there are a great number of Excise prosecutions which are brought before magistrates; but reports of them scarcely ever appear in the public journals.

2235. Are you aware that in the metropolis there is a law which orders that all bread not made of pure wheat flour shall have a large "M" marked upon it, denoting "mixed"?—Yes.

2236. Have you ever seen loaves so marked in the metropolis?—None.

2237. Does that arise from the want of a public prosecutor, in your opinion?—I have no doubt of it.

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2238. You think that poor men have not the time or the means to undertake such a prosecution?—Decidedly.

2239. Is it possible for any man of even more than ordinary intelligence to detect such adulterations as rice in pepper, and alum in bread; is it possible even for medical men always to test and analyse drugs?—It requires persons to be specially educated for the purpose.

2240. Viscount *Goderich*.] You stated that you did not think the local officer of Health would be brought into direct contact with persons who were guilty of adulteration; would not he be required to give evidence of the fact of his having found adulterated goods upon their premises?—I do not think he would be a witness; he would merely preside; he would constitute almost a Board in himself, and he would have matters referred to him, and if any complaint were made against him, he would say, "This matter was brought before me, and I have only done my duty in investigating it."

2241. He would act in a judicial capacity and not as an inspector?—Quite so.

2242. Mr. *Moffatt*.] Have you made any calculation as to the number of inspecting officers, which would be necessary to carry out your plan, throughout England and Wales?—No; but I have been calculating that I could myself put down adulteration in London, if I had the requisite power under the law, at an expense of 10,000*l.* a year. I form that opinion from what has been done by the private Commission which I instituted.

2243. You speak of adulterations in every branch of trade and commerce?—Yes; in London and the suburbs.

2244. Extending to everything we eat, drink, or smoke?—I believe so; but I must have the requisite power to apply my means.

2245. Into how many trades did the Analytical Commission of 1851 make inquiry?—The Reports were on coffee, sugar, arrowroot, water, chicory, mustard, bread and flour, cocoa, revalenta, oatmeal, tea, milk, isinglass, vinegar, spices, preserved provisions, pale ale, cayenne pepper, curry-powder, fruits and vegetables bottled, potted meats, sauces, jellies, opium, lard, jalap, ipecacuanha, tobacco, snuff, cigars, cheroots, confectionery, porter, and gin. Now, those would refer only to a few trades.

2246. You did not include wine in the trades you have read?—No; wine is not included.

2247. How many persons did you employ in your Analytical Commission?—I confided the whole to Dr. Hassall, who was empowered to obtain such assistance as he might require.

2248. Do you know how many he employed?—No; but he consulted every now and then men of distinguished attainments, and he had the assistance in the chemical department, to a considerable extent, of a very distinguished man, Dr. Letheby.

2249. How many samples did he obtain from different parts of London?—I had an account of them, but I cannot state from memory.

2250. Have you any idea what proportion they bore to the whole number of vendors in the metropolis?—No.

2251. *Chairman*.] What was the course adopted in the selection of those persons whose goods were examined?—My recommendation to Dr. Hassall was to take all persons of a certain trade in a street at a time; not to make a selection. I thought that might be unfair, but to take them all, right and left: for example, the entire body of grocers, or bakers, in a street. I believe that was done in as fair a way as possible. I had nothing myself to do with the selections. I never gave Dr. Hassall the name or address of a single person whose goods he was to examine, from first to last; sometimes I had the misfortune of seeing the names of some of my own constituents in the list, but I never altered a single name or address, from the moment the inquiry was instituted, up to its conclusion.

2252. Mr. *Peacocke*.] Were you in Parliament at that time?—I left Parliament about 18 months after the Commission commenced. It began in January 1851, and terminated in December 1854.

2253. Mr. *Moffatt*.] In stating your impression that with 10,000*l.* a year you could put down adulteration in London, have you made any estimate of the number of men that would be requisite to effect that object?—Yes, I have; I think

I think half-a-dozen examiners, and three or four purchasers, would be quite sufficient.

2254. For the whole of the metropolis?—Yes.

2255. The employment of some ten persons would be sufficient?—I think the employment of some ten persons would be sufficient.

2256. For all the trades in the metropolis?—I think so.

2257. Are you aware how many shops there are in the metropolis?—I do not exactly know the number. I know we have 2,500,000 people; but you will observe that the terror which was produced by the Commission was indescribable. What you have to do is to let something of your proceedings be seen every day and every hour. Let all tradesmen who adulterate or are disposed to adulterate know that the machinery of detection is alive and active, that it is not heavy and cumbrous, but that at every moment there may be a person making a purchase, and if there be an adulterated article the dealer's name may be placarded at once, and brought before the public; the risk would be so great that he would not incur it.

2258. Having appointed your purchasers and inspectors, would you propose to have a responsible Analytical Board?—There should be, without doubt, a laboratory somewhere connected with the Board of Health, and you should have a sufficient number of persons there to work it so as to make the requisite examinations after the purchases have been made.

2259. What remedy would you give in case this Analytical Board made mistakes, or in case the purchasers and inspectors did not do their duty, but showed partiality to one tradesman over another?—I can only give the ordinary remedy of the courts of law, and bringing an action for any unjust injury which might be sustained.

2260. You would propose to give a power of arbitrary entrance into the shop of every vendor of goods in the country, and that the evidence of a single party going in and taking by purchase any quantity of goods should be sufficient to warrant the publication of these semi-official or official placards, by which the character of that individual would be, in a case of inaccuracy, permanently damaged?—After having given to the party the power of having the article examined himself, and appealing to the Board; most unquestionably it would be desirable that he should not be placarded without being heard in his own defence.

2261. What security would you give that the articles purchased at a shop were the same as those which were inspected?—You could only rely upon the character of the purchaser, and on the result of a second call. In every instance where any analysis was made, a portion of the article should be left in case of an appeal, so that it might be identified.

2262. A portion left where?—Retained by the examiner, under seal.

2263. Having stated to the Committee that this course of examination spreads very great terror, and has a very great influence on the well-being and prosperity of tradesmen, would not it be very much open to the abuse that the purchaser of the goods, a man in no very exalted sphere of life, might have offered to him a considerable bribe from a wealthy tradesman to say, "I purchased such goods in such a shop, and here are the samples I purchased"?—He would not be condemned without a hearing.

2264. Assuming the person said, "I did not sell him those goods; come and see what there is in my shop;" it is of course difficult to prove a negative in a case of that kind?—Undoubtedly.

2265. *Chairman*.] You are aware, perhaps, that millers in this country are liable to precisely that difficulty at the present time?—They are.

2266. Mr. *Peacocke*.] And it is a question of evidence, like many other things?—Yes; the inconveniences and annoyances which you may anticipate appear to be of a very alarming character, and may be very distressing, and every now and then inflict great injury; but I believe the time is not distant when the whole practice would be at an end, and I do not believe there would be any important adulterations at all.

2267. Mr. *Kinnaird*.] You must have had some experience in conducting the examinations which have been referred to; were there many appeals from your statements?—Compared with the whole number of the reports, exceedingly few.

2268. Viscount *Goderich*.] I suppose it would have been possible that the persons employed by Dr. Hassall, to make purchases for him, might have been

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bribed in the manner alluded to by the Honourable Gentleman; but you had no complaints of that kind, had you?—Not the slightest; and Dr. Hassall himself, I believe, was so careful and guarded that he generally attended with the parties, and saw that the purchases were made; and I think I have heard him say that he labelled them directly afterwards.

2269. It would be possible for the persons permanently appointed to act in the same manner?—No doubt.

2270. Mr. Moffatt.] The two cases are not precisely analogous, I apprehend, because it is quite clear that, in the case of Dr. Hassall, he was bound to act with the greatest care and circumspection, and caution, in regard to the goods he reported on?—No doubt.

2271. Viscount Goderich.] Would not the person appointed by the public be equally bound?—Quite so.

2272. And under the same penalty?—Certainly.

2273. Mr. Moffatt.] Having an impression that this would be done in London by ten officers, how would you propose to treat the other large towns of England, and the rural districts?—I think, in rural districts, you must place the matter under the local Boards of Health.

2274. To whom should the samples obtained be submitted?—To officers appointed by the local Board, probably presided over by the medical officer of Health.

2275. Would you propose that in each union there should be an Analytical Commission?—It may not be necessary in each union; in each considerable district there should be. There might be one for every borough, and I think the expense would be as reasonable there as in London. In cases of any difficulty, the articles might be sent for reference to the General Board in London.

2276. Chairman.] As a Board of Appeal?—As a Board of Appeal.

2277. Mr. Moffatt.] You are aware that it requires very highly educated chemists, in many cases, to detect adulteration in articles of food?—Exceedingly well educated as practical chemists.

2278. When you found that articles were adulterated with other substances which did not tend to injure the quality of the article, would you publish the names?—If the article is adulterated, you must take it as a rule that there is deterioration; and I do think that tradesmen should sell all articles by their proper names; I believe it is their anxiety, in fact, to do so, and that trade should be reduced to its proper basis.

2279. Chairman.] Have you any objection to their selling coffee and chicory, if they call it coffee and chicory?—Not the least.

2280. Mr. Moffatt.] It has been given in evidence that the isinglass sold in this country, which is not the pure isinglass imported, but mixed with other matters, makes really a purer and truer isinglass than that which is imported; how would you deal with a case of that kind?—I would call the thing by its proper name; I would call isinglass, isinglass; and I would call that preparation, whatever it may be, by its proper name; but I very much doubt whether the preparation is better than isinglass.

2281. Viscount Goderich.] Do you think it honest to call a preparation entirely of gelatine, without any isinglass in it, by the name of isinglass?—Quite the reverse; I do not believe that manufactured gelatine is so easily digested as isinglass.

2282. Mr. Moffatt.] The Committee has heard a good deal of evidence with respect to inferior qualities of goods being sold for the better qualities; would you propose that your inspector should take cognisance of that?—I think not.

2283. It is only when substances foreign to the character of the articles sold are found to be mixed with them, you would propose to report upon them?—In some extreme cases there might be a sign to denote that the goods examined were of an inferior quality, but it would be going too far to impose any fine, or lay any interdict on the sale of an article of inferior quality.

2284. You found, I think, one article which was more adulterated than any other, and that was coffee?—Yes.

2285. Speaking from memory, can you state whether you found any one article in which adulterations were detected which were of such a character as to damage the public health?—In pickles that was frightfully the case, and so also in the case of alum in bread, it is most injurious; with respect to confectionery, I may say, that in 1836 "The Lancet" Commission was commenced.

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Dr. O'Shaughnessy, now in India, a distinguished and able chemist, made some analyses of confectionery which he purchased in London in that year, and the quantity of poison found in that confectionery was absolutely dangerous to life.

2286. Did you find much adulteration in drugs?—Yes, a great deal.

2287. In drugs of a very important character?—Without doubt, such as opium and scammony; there can be no question that something should be done on that subject. Only a few days since, I held an inquest upon a man who had in his pocket when he went into his house essential oil of almonds, which he had purchased at five different shops, four of them labelled "essential oil of almonds," and not one of them labelled "poison." To the same authority you might give power to regulate things of that kind, and prevent such practices.

2288. Does your experience in reference to the general subject of adulteration extend beyond the metropolis?—I cannot say that it does, except from letters I have received. I have had many letters requesting that the Commission might go down to places in the country.

2289. You would propose to put the whole of the United Kingdom under the same treatment?—Yes; the disease is very extensive, and I think the remedy should be equally extensive.

2290. You have made no precise calculation, I understand, as to the staff which would be requisite for the prevention of adulteration throughout the whole kingdom?—I have not.

2291. Mr. Kinnaird.] In answer to a question by an Honourable Member, you stated that it required men of very high qualifications to analyse and test drugs and other articles; do you apprehend there would be any difficulty in finding in the principal towns, and in the rural districts, fit men to undertake such duties?—In some small places there might be a difficulty at first, but I am sure young men would be educated up to the requirements in two years, or even in one year.

2292. Might not that difficulty be obviated by there being a reference to the central Board in London?—Certainly, to a great extent.

2293. Mr. Peacocke.] If I understand aright, very ordinary tests are sufficient to discover some adulterations; in others more intricate tests are requisite; would not it be a question for the magistrate, whether he considered there was sufficient evidence of adulteration or not; and if it was an intricate case, could not he send the article up to London for examination?—He would hear parties for and against. If the defendant had any witnesses, of course they would be called.

2294. Mr. Moffatt.] How would you treat the wholesale druggists and dealers in various articles which you state to be very much adulterated?—In the same way as the retail dealers.

2295. Of course you would find adulterated goods most frequently in the shops of retailers; would you warrant its being stated, assuming you found those adulterations, that the parties alleged the goods were bought of such and such a wholesale dealer, as their justification?—I think, if the retail dealer gave up the name and address of the party from whom he made the purchase, he ought to be exonerated.

2296. Mr. Peacocke.] I presume you propose, in the case of those local prosecutions, that the necessary funds should be raised by local rates?—Without doubt, they would come out of the general rate of the place.

2297. Mr. Wise.] Do you recommend, adulteration being so extensive, that the principle of protection to the purchaser should be more extensively carried out than it is now?—Certainly.

2298. In one word, you would change the motto of English law, *caveat emptor*, to *caveat venditor*?—That is what is absolutely necessary.

2299. You alluded to an important subject which has been frequently mentioned in this Committee, namely, the mixture of alum with bread. It has been stated that alum is not injurious to health; are you of that opinion?—I am not, certainly.

2300. Can alum in bread be digested, and received into the system?—The extent to which that may be effected is a doubtful matter; there are differences of opinion about it, and I do not see that they can be easily reconciled.

2301. Does not it adhere to the coats of the stomach?—It has not been found in any case that I am aware of. Repeated as the dose is day after day, when persons are, for example, living on bread, it appears to me to be impossible

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sible it could be taken without doing injury. I am afraid that a great number of infantile diseases, more particularly diseases of the mesenteric glands in young children, are referable to improper food.

2302. The Committee has heard suggestions with reference to the prevention of adulterations; has your attention been turned to the system which is carried out in Paris?—Yes.

2303. Are you of opinion that a system of the same kind would answer in England?—I fancy it is more cumbrous than is necessary. I do not think the examiners meet sufficiently often, and it appears the Boards have not a sufficient number of officers. It seems to me that there should be some person daily at work, so that a man who is disposed to adulterate should feel that there is a daily chance of his exposure and punishment. I think in France the system is not sufficiently active; though I am told that the goods sold in Paris are very free from adulteration, but not so in the provinces.

2304. You have heard, perhaps, that adulterations are so extensive in Belgium that they have been obliged recently to pass a law upon the subject?—I have heard so.

2305. Do you think the punishment there is too great, imprisonment from eight days to a year, and a fine of 50 francs to 1,000 francs?—I think that is going too far; I would try a milder punishment here first.

2306. With respect to the sale of drugs, are you of opinion it would be desirable that all chemists and druggists should be licensed?—I think it would be a very good thing; I am inclined to think it would be a very good plan to have every druggist and every professional man licensed; I think a general licence system for all trades and professions would be a very good arrangement.

2307. Are not you of opinion that all respectable druggists would be delighted at such an arrangement?—I think they would be perfectly satisfied with it.

2308. So that by paying five shillings or ten shillings a year for a licence, there might be a protection given to honest tradesmen?—I do not think they would object to a larger sum; there are not more respectable tradesmen than the first class chemists and druggists. Great improvements have taken place in the trade of late years in consequence of the exertions of the Pharmaceutical Society.

2309. *Chairman.*] Their system of licensing, in point of fact, does carry out to some extent the view which the Honourable Member has suggested?—Yes.

2310. *Mr. Moffatt.*] Do they pay for their licences to the Pharmaceutical Society?—There is some payment for the diploma.

2311. *Mr. Wise.*] You have been asked as to the adulteration or impurity of drugs in the provinces; are not you of opinion that very little actual adulteration takes place in the provinces?—I have related instances of adulteration which occurred in a country town 45 years ago; I have never known worse cases than those even in London.

*Jacob Bell, Esq., Editor of the "Pharmaceutical Journal," called in; and Examined.*

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2312. *Chairman.*] YOU were formerly Member of Parliament for St. Albans?—I was.

2313. You are now engaged in the wholesale drug trade, are you not?—I have been in the drug trade for a great many years, chiefly in the retail trade, with some wholesale trade attached to it.

2314. You are generally acquainted, I believe, with the evidence which has been given before this Committee on the subject of the adulterations both of food and drugs?—Yes.

2315. After hearing or reading that evidence, will you state to the Committee whether, generally speaking, especially so far as the evidence applies to drugs which have particularly come under your own examination, you agree in opinion with the previous witnesses to the extent of believing that there is a very general or a very extensive adulteration in drugs?—A great deal of what is stated in the evidence I have known to be the fact for a good many years; I think there is much exaggeration in the evidence which I have seen printed.

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It is a subject to which I have devoted great attention, and have published a good many papers upon it in connexion with the Pharmaceutical Society, which was established for the purpose of preventing that, among other abuses, by promoting the education of pharmaceutical chemists.

2316. Will you state to the Committee when it was you first began to turn your attention to the question of adulteration?—In the year 1841 the society was established, and in the December of that year the subject was discussed at a pharmaceutical meeting. I perhaps may be permitted to quote from a paper which I read at that meeting, the words which I should otherwise have used as conveying my own opinion at the present time: "Notwithstanding the efforts which are occasionally used to expose the dangers and disadvantages resulting from this evil, very little impression appears to be made; each ephemeral panic is succeeded by an interval of indifference; the inventors of sophistications continue steadily to pursue their scientific researches; the rage for cheap medicine prevails unabated; and the advocates of reform are discouraged and disheartened at their want of success. The subject is one in which every druggist ought to feel interested; it claims the especial attention of the medical profession, and must always be kept in view by the Pharmaceutical Society. Although no one would pretend to deny the prevalence of systematic sophistications, and the frequent sale of drugs which are absolutely worthless, the reproaches which are cast upon the trade in general are, in many cases, unjust, and the reports are often exaggerated. It therefore becomes our duty to investigate the sources of the evil; to discover where the guilt exists to the greatest extent; and to devise, if possible, an effectual remedy. It is well known that a large proportion of the adulterations take place in foreign countries, where drugs are collected by the natives, and brought into a certain state of preparation for the market. The parties concerned in this business are not responsible for the purity or efficacy of their products, and their policy consists in sending out such articles as will meet with an easy sale and produce the largest amount of profit. The quality of these drugs is regulated in a great measure by the nature of the demand; and it may be stated, as a general rule, that, when there happens to be a deficiency in the supply, adulterations are carried on to the greatest extent, the high price being a temptation to fraud. These drugs are imported by merchants, and sold either by drug-brokers or wholesale druggists; and, having been sorted or classified to suit the various demands of the retailers, they pass at last into the hands of the consumers. The public not being competent judges of the quality of drugs, the great desideratum with the majority is a low price; and the retailer, from a mistaken idea that he must humour this prejudice in his customers, finds himself obliged to buy stock of a proportionate value. The wholesale druggist is therefore, among some of his connexion, unable to meet the competition without reducing his prices below the standard of remuneration for articles of the first quality, and hence arises the demand for impure and sophisticated drugs, which are manufactured according to the emergency of the case by the irresponsible collectors in foreign countries." I believe that to be a true and concise statement of the facts.

2317. That was the state of things in 1841; do you believe that that is a fair representation of the state of things now, or what is the modification which has taken place since that time?—I think a considerable improvement has taken place since that time; what I have now read relates only to frauds which are perpetrated abroad, and which are purposely perpetrated in order to meet the demand of the public. There is another circumstance to which I beg to draw the attention of the Committee: "It often happens that drugs are damaged on the voyage, or from accident, or carelessness in their preparation, are comparatively worthless, yet we never hear of a cargo being condemned and destroyed; everything finds a customer at a price." Allusion was made at the meeting to which I am referring, which was one of the regular pharmaceutical meetings, to endeavours, made in America, to get rid of adulteration, and it is stated, "It is not improbable that similar drugs or portions of the same manufacture may have been circulated in this country; but in the absence of an effective pharmaceutical institution, the frauds have escaped detection, in which case we may presume that the discredit has unjustly fallen on the medical practitioners whose prescriptions have happened to be prepared with the impure drugs." I further stated that which I still think is a very important

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part of the case. "The most effectual means of checking the evils under consideration, and which forms a part of the plan proposed by Dr. Christison, is the education and improvement of dispensing chemists, and the extension of pharmaceutical knowledge." "The power of reforming the system rests chiefly with the retail druggist. It is he who comes directly in contact with the public in the administration of medicine, and who has the opportunity of inculcating among all classes the importance of using genuine medicines." "But the druggist is exposed to another difficulty in maintaining the good quality of his stock, namely, the liability to deterioration by keeping; and notwithstanding the utmost care in the selection and preparation of his drugs, he may not unfrequently be disappointed in their efficacy, where the consumption is variable and uncertain. The spontaneous decomposition is in some cases so gradual and imperceptible, that it is almost impossible to decide with certainty whether the article is fit for use or not, and the sensible characters of some drugs, especially in the compound state, are not sufficiently conclusive to enable the chemist easily to estimate the degree of purity or medicinal worth." That is the case in some instances. "It is sometimes argued, that if the consumption of drugs were restricted to those of the finest quality, the supply would not be sufficient for the demand; that the poorer classes, who could not afford to purchase the most expensive drugs, must either be destitute of remedial means, or use such medicines as their circumstances enable them to procure; and that economy in the selection of such articles as are genuine, although of inferior quality, is not prejudicial, but rather advantageous to the public in general. This question should be kept distinct from the systematic adulteration and falsification of drugs; in the one case, the patient is supplied with the best article which he can afford to pay for; in the other, he is imposed upon by the substitution of one substance for another; and, in many instances, the per-centage of foreign matter amounts to more than the proportion of saving in the price, in which case the purchaser would actually have been a gainer in pocket by giving the full value for the finest quality. It is true that every individual in the kingdom cannot be supplied with the most choice and expensive specimens, but it does not follow from this admission that any drugs need be sold, the medicinal properties of which are defective." "Few, if any persons, would knowingly purchase any article of this description; in fact the majority, although they insist upon paying a low price, are scarcely satisfied unless the word 'best' is on the label. There are, in some cases, several descriptions of drug in which a second quality will answer the purpose; but persons often encourage imposition by insisting upon having the best below the fair price, and some dealers therefore sell the second quality as the best. When an article is sold as of a second quality there can be no injury done to the consumer, because in drugs, as in regard to a tree of apples, the best are picked out for those who will pay a high price, but the smaller ones, which are inferior, are sold for as much as they will fetch. It is the same with drugs.

The mischief of defective medicines is not always immediate. It frequently happens that a person, from taking a defective drug, increases the dose, in order to produce the desired effect. Then, upon taking the same prescription to be made up where the genuine drug is used, the person is almost poisoned. That was one of the evils which was pointed out at the time I refer to. At that time the subject was not at all popular; it was a new species of reform; and every one knows that a new kind of reform is always received with indifference, and that it requires a considerable time to induce the public to pay attention to it.

2318. The Pharmaceutical Society was established so far to educate the chemists of this country as to enable them to detect adulteration, and protect themselves against the purchase and sale of such drugs, was it not?—Yes.

2319. Can you state, in a few words, the result of your experience as to the change which has taken place since the Pharmaceutical Society has been established?—A very considerable improvement has taken place in many of the drugs and chemicals which are sold, in consequence of the tests for their purity having become more known, and the attention of chemists having been drawn to the subject; this was facilitated by some articles written by the late Mr. Richard Phillips, the editor of the London Pharmacopœia, which I published in the Pharmaceutical Journal, in the years 1842 and 1843, entitled "Illustrations of Pharmacy in England." The object of those articles was to show the result of the examination of certain drugs and chemicals purchased in

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in the way which was done in the case of the Analytical Sanitary Commission; but Mr. Phillips did not make a personal attack upon individuals; he suppressed the names; he only stated No. 1, No. 2, and No. 3 contained such and such impurities. I have here copies of the journals in which they were published, spreading over about six months. During that time a number of the impurities were stated and exposed by Mr. Phillips, which have been under the consideration of this Committee; among others I may mention the impurity of oxide of zinc, which was generally contaminated with carbonate; also milk of sulphur, which about 20 years ago it was difficult to obtain, except with a considerable amount of contamination of lime, because the process at that time adopted by the sanction of the old pharmacopœia caused a quantity of lime to be mixed with it; it was precipitated with sulphuric acid, which threw down the lime as well as the sulphur. I remember having great difficulty in getting a manufacturer to make some for me which had none of this adulteration.

2320. In fact, that was an error or imperfection in the manufacture?—Yes. In consequence of the exposure which was made by the Pharmaceutical Society chemists began to ask for pure milk of sulphur, and now I do not know where to get a sample of the old kind.

2321. What you state with regard to that article is true generally of drugs, that the quality of them has materially improved since the establishment of the Pharmaceutical Society?—Materially so; in the case of scammony, we never saw pure scammony 20 years ago; the first sample of scammony I saw which was pure I did not recognise as scammony at all, it was so different from that which we were accustomed to see; even now we could not obtain a sufficient supply of that which is absolutely pure, but if the demand were to extend, the persons abroad would make it to suit the demand; whatever demand exists, the supply follows as a matter of course.

2322. Mr. Wise.] Am I correct in assuming with regard to scammony, that the article varies in value as much as from 7 s. to 8 s. a lb. to 48 s.?—It does.

2323. So that it is a question of great importance whether the scammony used for a patient be of the first quality or an inferior quality?—It must make a great difference, because a larger dose must be ordered if an inferior drug is used.

2324. From your knowledge of the trade, do you think that scammony of the lower value is used to a very great extent?—I believe the medium value is chiefly used; it is mixed abroad to any price. The proportion of flour or chalk, or other ingredients which are added, depends entirely upon the price; and when the wholesale druggist in England writes to his correspondent, the maker at Aleppo, or wherever the manufactory may be, he states the price, and it is mixed accordingly.

2325. The article of scammony, then, would not come under the denomination of articles as to which there was no responsibility in preparing them; there appears to be some kind of responsibility there?—Scammony is rather a leading article; the persons who make it are men of some degree of importance, and they are, to a certain extent, responsible to their customers; but the responsibility is only that the manufacturer must give satisfaction to the purchaser; if the purchaser is satisfied there is no other responsibility.

2326. Do you think it would be any advantage to the public and to the wholesale and retail druggists of this country, if there were some inspection or supervision upon the importation of those various articles?—I think there should be something of the kind; and upon that subject I shall come presently to speak of some regulations in America, which it would be desirable to introduce here. There is another article which I would refer to—senna. Some years ago almost all the senna imported was adulterated with cynanchum, a leaf resembling senna in general appearance, but to the botanist there was a considerable difference. Professor Christison directed my attention to that in 1842, and I wrote a paper upon the subject, which was discussed at the Pharmaceutical Society. It is a question which we generally ask of candidates who come up for examination. When the drawer of senna is presented to them, we say, "Is there any adulteration in that; pick out a leaf of cynanchum?" The fact is now so generally known, that a bale of senna which is much adulterated in that way will scarcely obtain a purchaser; therefore, we scarcely know where to find any cynanchum. It has to so great an extent



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ceased to be imported in consequence of the demand for that particular class of senna having been reduced. I mention that to show that by diminishing the demand for anything which is adulterated, the obvious effect is that a purer article is supplied.

2327. *Chairman.*] And in ample quantities?—Yes. I think there ought to be a great distinction made between three causes of impurity in medicines; first, a fraud by the intentional substitution of one thing for another, or the mixture of one substance with another; second, the sale of articles which are injured by keeping, which is an act of carelessness as much as anything else; thirdly, the want of skill in the manufacture of an article. There are many extracts which may be quite genuine, but very inferior in quality to other extracts, simply because the maker was not sufficiently acquainted with certain parts of the manipulation, or was not sufficiently careful to attend to the quality rather than the quantity of the product. By boiling a root a great deal, and then taking it out and bruising it and boiling it again, and various other modes, a large product may be obtained which is quite genuine, but not so good as that which is obtained by a very careful process by only one maceration, or just so much as to take out the active principles, without taking the albuminous portions, or the starch and the fibre of the root, which would diminish the strength of the extract.

2328. In drawing a distinction between those different classes of impurities, do you mean to imply that in the one case, that of an absolute intentional fraud, you would be disposed to apply a legal remedy in the way of punishment, and that in reference to the other two classes, you would leave them to be prevented by the superior education you are now giving to the chemists of this country?—I think with regard to the third class, the want of skill in the manufacture, the public must take care of themselves; but in regard to the first and second class, fraudulent adulteration and the sale of an article which has been spoilt in the voyage, and is unfit for use, it might be proper that if it can be brought home to a person that he has intentionally sold articles which are unfit for use, there should be a facility in procuring his punishment.

2329. *Mr. Wise.*] How would you treat a question of this kind; assume that a portion of ipecacuanha which is damaged so as to be unsaleable is made marketable by being ground?—That is the case sometimes.

2330. Into what class would you put that?—If it could be proved that it had been used to mix with the sound ipecacuanha so as to reduce the price and increase the profit, that would be one of the frauds which I think should be amenable to the law.

2331. *Mr. Otway.*] You might deal with it in the way you do with a man who sells putrid meat, which is afterwards converted into a beefsteak and eaten, might not you?—I think it is equally an offence to sell it, whether it is ground or unground; in one case it would be easy to detect it, and in the other it would not; if it were mixed with a little good ipecacuanha, to impart to it the smell, it would be more difficult to detect the impurity.

2332. Opium is very much adulterated, is not it?—I believe it is; still genuine opium can be obtained by those who like to go to the market and give the price for it; it is chiefly a question of price; also it requires a little skill to judge of it; an opium dealer or one who is in the habit of making morphia will judge very well by his experience in continually handling it, and will form a much better opinion than one who only buys a pound occasionally for retail use. The same observation applies to bark; barks are frequently sent over which are worthless; there are not perhaps half a dozen persons in the kingdom who are able with any degree of certainty to judge of the precise condition of a bark, as to the amount of quinine it will yield.

2333. *Mr. Swift.*] Is not that an omission in the education of gentlemen in your profession?—You may carry education up to a certain point, but this requires a person to be always in the market; there are such men as Howard, of Stratford, who are appealed to as authorities, and some French chemists who are great connoisseurs on the subject, but it is extremely difficult to form an accurate opinion as to the precise proportion of quinine which might be obtained from bark.

2334. *Mr. Otway.*] Are you of opinion that a great deal of adulteration takes place among drug grinders?—I think some adulteration does, but not nearly so much

much as was the case some years ago; it was formerly the custom to send 14 pounds of a drug to be ground and receive a quarter of a hundred weight, and sometimes half a hundred weight back; but that custom, I believe, is entirely discontinued.

2335. *Mr. Wise.*] Have you not heard, and is not it a frequent occurrence, that persons are sent in charge of drugs which are to be ground, so as to watch that no adulteration takes place?—I have not heard of that as a frequent occurrence. I should be very sorry to employ a person to grind drugs who required looking after in that way; it may have been done. Till very recently, it was always the case that persons expected to receive the full quantity back in powder, without any allowance for loss in grinding; but within the last 15 or 16 years, I believe that has been so completely exposed, that a better system has been introduced. I saw in the evidence the other day, an allusion to gentian compositus. I may mention that I never saw powdered gentian ordered in a prescription. The powders referred to were chiefly used as horse and cattle medicines. I do not say that by way of justification, but it is the case that the powders to which I refer, where adulteration is practised to such an extent, are chiefly for that purpose.

2336. With reference to the use of English rhubarb in this country, are you of opinion that it is used extensively instead of Tartar or Turkish rhubarb?—I believe it is to some extent, but I have not tried it, and am not competent to form an opinion as to the medicinal properties of it. It is a great deal cheaper than the other qualities of rhubarb, and if it can be obtained to answer the purpose, I do not see why we should send abroad for a thing which we have the means of growing in this country.

2337. Is it reputed to be so active as the other?—It is not; but it is considerably improved by cultivation.

2338. Is damaged rhubarb employed at all?—I believe it is; there is a great difference in the quality of rhubarbs. I have frequently observed it when sitting at committees of a Board of Guardians, and seeing samples brought in.

2339. There is East Indian rhubarb used, is not there?—Yes. I conceive that medicinally there is not much difference between the East Indian and the Turkish rhubarb. It is generally considered that East Indian is quite as efficacious medicinally, if it is in a good condition.

2340. You alluded to the article of bark; do you suppose that it is mixed with spurious barks to any extent?—I think it requires a good deal of skill to collect the bark. Persons go into the woods and they have to select the best tree, and then to get the bark in a proper state; and a person who is not very skilful may, without any intentional fraud, get a considerable quantity of bark which may be of very little use; but it requires a great deal of skill in the purchaser to detect the difference.

2341. Am I correct in supposing that any adulterations of a still more serious kind are practised, such as mixing them with farinaceous powders which are coloured?—I believe that has been done; but I never had any case come under my notice.

2342. *Mr. Otway.*] I understand that a chemist in this country, before he has the power to dispense drugs, has to obtain a certificate of certain qualifications; is that the case?—No; any person may be a chemist without any education at all. He may be a shoemaker to-day and a chemist to-morrow.

2343. And he may dispense drugs of every description?—Yes. He must not call himself a pharmaceutical chemist or a member of the Pharmaceutical Society, unless he is on the register.

2344. He may call himself a chemist?—Yes; we have always maintained that any attempt to put a stop to fraud in drugs would be perfectly useless as long as any person, however ignorant, was allowed to deal in them, and no provision was made for the education of that class of persons.

2345. Any man in this country who chooses may set up a chemist's shop to-morrow, and may dispense all drugs and poisons without any restriction whatever?—Yes. There are a great many persons who are qualified; but if they are so, it is because they think proper to qualify themselves, it is not because the law compels them.

2346. *Mr. Gregson.*] Do you think there are many such ignorant chemists as you speak of?—There are some. I have had a fitting-up order from a schoolmaster, who knew nothing about chemistry; he wished to open a shop

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because he thought there was a good opening in the neighbourhood. I declined his order.

2347. Mr. *Otway*.] Are you aware of the custom of other countries in regard to this matter?—Yes; I have paid a good deal of attention to it. In France no person can act as a pharmacien unless he has been examined and received a diploma. In Germany they are also very strict. In some of those countries the number is limited, and the price which is to be charged for everything is regulated by law. Consequently every person who is in business is quite sure to have the means of obtaining a living without resorting to any of those practices to which competition drives people in this country.

2348. And of necessity the means of punishment are much more efficacious, and the means of detection more facile?—Yes. I endeavoured in the Pharmacy Bill, before it was passed, to introduce a provision that no person, except those who were already in business, should be permitted to carry on the business of a chemist unless he had been examined. That was, however, altered in the Committee of the House of Commons; and it was understood to be entirely a permissive act to give a professional status to those who chose to come under its operation, but to have no prohibitory power over any person, however ignorant in regard to the sale of drugs.

2349. Does any suggestion occur to you with regard to the restriction of the sale of poisons by chemists?—I believe the only safeguard the public can have is, that the chemist should always label everything "Poison"; that he should never sell to a person any poison unless he knows the person understands the use of it; and if it is to be taken inwardly he ought to be fortified with the prescription or order of a medical man.

2350. *Chairman*.] Have you read the evidence of Dr. Moore Neligan on the subject of dispensing poisons in Dublin?—Yes; I read a brief report of it in one of the newspapers. I have a different opinion upon that subject from the doctor's, because I think any rule of that kind, unless it can be made absolute, is worse than no rule at all. If the public have the impression that anything which is poisonous is in a square bottle, it follows that they will believe that anything which is not in a square bottle is perfectly safe; and then if there happen to be no square bottle at hand, and poison be put into a bottle of a different shape, they are exposed to all the danger which would exist if there were no plan of the kind in existence.

2351. Viscount *Goderich*.] You think the risk from carelessness, in putting poisons into wrong bottles, would be greater than the advantage which would be derived?—Yes. I think the risk from the habit of attributing security to a circumstance which is merely accidental would be an increase of the evil; and that by far the best safeguard would be that of placing "Poison" upon everything which is poisonous.

2352. The same objection would probably apply, you think, to putting different-coloured labels upon bottles?—Yes; I think if all the nurses in the kingdom were told that any liquid which had a green label was dangerous, and everything which had not a green label might be taken with impunity, it would lead to great risk. If you could make every chemist put a green label upon poisonous things, it might be a safeguard; but it is impossible to do so, and therefore in every case where the rule was disregarded the danger would be increased.

2353. Mr. *Otway*.] I understand the restriction which you have suggested, in answer to my question, to be a matter rather of feeling than of anything else; can you suggest any legislative measure by which chemists might be restricted?—I do not see how that could be done; I do not know where to draw the line between poisons and drugs which are not poisonous.

2354. Would it be better that a chemist should be prohibited from selling strychnine, except under the authority of a medical man whom he knew?—I should see no objection to that; but there are many other poisons quite as bad as strychnine.

2355. *Chairman*.] Would it be difficult to classify a number of poisons which should come under such a regulation?—Perhaps it might be done; and in some places abroad no chemist can, without the order of a medical man, sell certain poisons which are on a particular list.

2356. Mr. *Gregson*.] Are not many poisons now prescribed by eminent physicians in small quantities as medicines?—A great many; some of our most efficacious medicines are poisons.

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2357. Mr. *Wise*.] How would the system work, of having one large chemist in every town, as is the case in Norway and Sweden?—I do not think that would suit our free trade notions at all; I think for the sale of some poisons a medical order might be required. The Arsenic Act was passed with the view of making it more difficult to obtain arsenic, and I think it has had some effect.

2358. *Chairman*.] Are there any further articles which you desire to refer to?—I do not know that I have anything very important to add.

2359. Mr. *Swift*.] Do you know whether *cocculus indicus* is imported into this country in large quantities?—I believe it is, but I have not referred to the returns lately.

2360. Do you know what it is usually used for?—I believe it is generally used for the adulteration of beer.

2361. Do you know any other purpose to which it is applied?—I am not aware of any other purpose; there are persons who are called brewers' druggists.

2362. To whom they resort for the purchase of such articles?—I believe so.

2363. Do you know whether the price of the article has augmented of late years in consequence of the large demand for it?—No; that has not come under my knowledge.

2364. *Chairman*.] I will now call your attention to what took place in America, I think in the year 1847, showing that at that period the attention of medical men in America was called to the extensive adulteration of drugs; the Committee would like to know what were the steps which those medical men took in appealing to the Legislature, and what the Legislature did in order to meet that appeal?—I may mention that I had been in correspondence many years before this with the chemists of America, and we had been mutually stimulating each other to try what we could do to produce an improvement in the quality of drugs, as well as in the education of those who are engaged in the drug business. In the year 1847 a circular was addressed by the President of the College of Pharmacy of New York, in the form of a memorial to the American House of Representatives, the object of which was to obtain the introduction of a law to prevent the importation of drugs which were unfit for use.

2365. Will you state to the Committee the heads of that circular, and can you also put in the whole circular for insertion in the evidence?—The circular details a variety of adulterations which had taken place; there is the report of the composition of a substance sold as blue pill, containing mercury, earthy clay, Prussian blue, and sand; oxide of zinc is generally carbonate of zinc, and imported at a price which precludes the possibility of the necessary preparation. Opium is often invoiced at one-third the value of the good quality, and is found on examination not to be worth even that; the same may be said of scammony. Most of the foreign extracts are not what they profess to be, and cannot be relied on in the treatment of disease. Salts of quinine and morphine, and all the more costly chemicals, are greatly adulterated. In the number of the "Pharmaceutical Journal" in which I published this, I made these remarks, which appear to me to give a concise idea of the system which was pursued: "It appears to be a general rule that articles of inferior quality are 'good enough for the foreign market;' and, while the English consumer suffers from this imposition on his credulity, in reference to foreign productions, the English manufacturer pays off the foreign consumer in the same coin. The most effectual remedy against this international robbery would be a regular and systematic inspection of imported drugs on their arrival into the country. For this purpose a competent Board should be appointed, having authority from the Government to destroy such articles as could be proved to be unfit for use, and, in flagrant cases of imposition, to inflict a suitable penalty. If the pharmaceutical chemists in this country were properly constituted and empowered by Act of Parliament, it would naturally come within the province of that body to assist in a task so important to the credit of its members and the welfare of the public. By this means vast quantities of spurious or deteriorated drugs would be kept out of the market, which, in the present inefficient state of the law, are extensively circulated, and eagerly bought by those who delight in anything which is cheap." That was my opinion in 1847, and it is my opinion at present.

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2366. This memorial to the Senate and House of Representatives called, I think, upon Congress to pass a law effectually to resist what they call "the villany of manufacturers and importers of base compounds, counterfeit and misnamed articles, intended for medicine, so far at least as it can be done, in their passage through the custom-house, by competent inspection, forfeiture and exposure of the shame now borne in secret by the participators in this traffic"—That is the object of it. At the same time this was going on, I went with a deputation to the Secretary of State, at the Home Office, on the same subject, and applied for some assistance in regard to the qualification of pharmaceutical chemists, the object being to introduce the Pharmacy Act, which at that time was only in prospect. The result of the application was merely a polite reception, but nothing more, which is what we have experienced for a great many years.

2367. Will you state to the Committee what was the result of this application to Congress on the part of the medical faculty in New York?—Yes. In September 1848 I published a report of the Act which was passed in consequence of this application to the legislature. I may put in this Act as evidence. The first clause is, "Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, that from and after the passage of this Act, all drugs, medicines, medicinal preparations, including medicinal essential oils, and chemical preparations, used wholly or in part as medicine, imported into the United States from abroad, shall, before passing the custom-house, be examined and appraised, as well in reference to their quality, purity, and fitness for medical purposes, as to their value and identity specified in the invoice." Section 2, "And be it further enacted, that all medicinal preparations, whether chemical or otherwise, usually imported with the name of the manufacturer, shall have the true name of the manufacturer, and the place where they are prepared, permanently and legibly affixed to each parcel, by stamp, label or otherwise; and all medicinal preparations imported without such names affixed as aforesaid shall be adjudged to be forfeited." The third section enacts, "that if they are found, on examination, to be impure, they shall not be allowed to pass the custom-house." The fourth simply refers to the power of appeal of a person who may think that he is unjustly accused. On the whole, the Act appears to me to be a good one, and the result has been quite as satisfactory as might have been expected. Though nothing that can ever be contrived will prevent all fraud, it has, to a certain extent, diminished it.

2368. Your correspondence with persons on the other side of the Atlantic satisfies you that the effect of that law has been beneficial?—I am so informed; and that is strongly confirmed by a report which was published in the year 1853. On the 1st of February in that year, I published an account of the organisation of pharmacutists in America, which they had been for some years endeavouring to bring about; and I think they were in some degree stimulated to make further progress by what we were doing in this country; they succeeded in establishing a regular association, which meets annually to discuss various subjects, and among others the adulteration of drugs holds a prominent place. At one of the meetings there was an extract from a report read from the inspector of drugs in New York, M. J. Bailey, M.D., special examiner of drugs, medicines, chemical-medicinal preparations, &c. To show the efficacy of the inspection, here is a list of certain articles which were found to be unfit for use. He says, "The following are the more important articles, with the quantities annexed, that I have since rejected and condemned, as not of the requisite strength and purity to be safely and properly used for medicinal purposes; viz., senna, 31,838 lbs.; jalap root, 37,121 lbs.; rhubarb root, 5,782 lbs.; sarsaparilla, 65,374 lbs.; mezereon bark, 1,353 lbs.; opium, 3,164 lbs.; kino, 230 lbs.; scammony, 1,483 lbs.; aloes, 12,375 lbs.; squills, 1,626 lbs.; spurious Peruvian bark, 304,135 lbs.; Spanish saffron, 360 lbs.; ergot, 475 lbs.; camomile flowers, 1,896 lbs.; assafetida, 3,700 lbs.; worm seed, 230 lbs.; colchicum seed, 2,246 lbs.; valerian root, 650 lbs.; guaiacum, 9,300 lbs.; cream of tartar, 7,673 lbs.; magnesia (carbonate), 2,867 lbs.; magnesia (calcined), 1,560 lbs.; althæa root, 1,117 lbs.; liquorice root, 9,430 lbs.; bistort root, 140 lbs.; gentian root, 7,572 lbs.; gentian root (in powder), 430 lbs.; lavender flowers, 3,042 lbs.; poppy flowers, 190 lbs.; hellebore root (white), 460 lbs.; Pareira brava root, 730 lbs.; cantharides, 1,276 lbs.; creosote,

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creosote, 140 oz.; bromine, 430 oz.; sulphate of quinine, 3,200 oz.; iodine, 6,864 oz.; hydriodate of potass, 3,720 oz." Those were articles absolutely rejected as being useless.

2369. Viscount *Ebrington*.] What happens to those drugs after they are condemned?—I believe they are destroyed.

2370. Mr. *Wise*.] Does this stringent law of inspection in bond prevent an extensive adulteration of drugs in the United States?—It prevents a particular class of fraud, which had become so common that the term "good enough for America" was a sort of proverb.

2371. Still, I understand, drugs are extensively adulterated in America?—I believe they are, but all that can be done is to find out a channel through which a check can be placed upon it, and as soon as a new species of ingenuity is invented, to put a check there; we can only temporise by obtaining evidence of the existence of fraud, and applying the remedy where fraud exists.

2372. Are you aware whether any other system of prevention is pursued?—Great efforts are being made by the pharmaceutical chemists themselves, by the introduction of a code of ethics among themselves, by exposing adulteration whenever they detect it, and by promoting a professional feeling and the general improvement of the body.

2373. Is that general in the United States?—Throughout the whole of America once a year they meet. Delegates go from one part to another for the purpose of discussing these subjects, and introducing a better system in each locality.

2374. That discussion has a considerable tendency to prevent frauds, you think?—Yes; persons find that by being honest they have a better chance of obtaining business than by practising fraud.

2375. Are you aware whether the same system is pursued in America of sending prescriptions to druggists to be made up?—Yes. There is a college in New York, and also in Philadelphia, where persons are examined, and having been examined they are more respected in proportion.

2376. Do you see any objection to the chemists and druggists generally in the United Kingdom having licences?—I see no objection to it. There is a licence which is a great nuisance, the patent medicine licence. That is a very absurd thing; but I think they would have no objection to have that removed, and have a licence of a more reasonable character.

2377. Attaching penalties to the offence of selling adulterated articles?—It would require a great deal of consideration as to the mode in which it should be regulated. I think if they have a certain privilege they would be willing to submit to a certain amount of restriction.

2378. Mr. *Swift*.] Does the inspection cease in America with the importation; is there no Government inspection after the drugs are introduced for consumption?—No; that is one source of difficulty. There is also a difficulty in having inspection at every port through which drugs pass.

2379. *Chairman*.] The principal ports of America are designated in the Act of Congress, are not they?—Yes.

2380. Mr. *Swift*.] The Act gives no power to inspect drugs when once in the chemist's shop?—No, not unless there is *prima facie* evidence of fraud.

2381. Mr. *Gregson*.] Are any drugs produced in the United States?—Yes, there are some large manufacturers of chemicals, many of whom export drugs into this country. At the time of the Great Exhibition they had a large display.

2382. Mr. *Otway*.] Do the chemists in America grind their own drugs?—I believe they do in many instances.

2383. Viscount *Ebrington*.] As the result of your experience and correspondence and consideration of the matter, what measures are you inclined to recommend the Legislature here to adopt; the Committee understand that you advocate an inspection in bond in the first instance?—Yes.

2384. Do you think it is desirable to follow up that inspection by an inspection of drugs in the retailers' hands also?—I think it is possible that some advantage might arise from the power of inspection, which has hitherto been vested in the College of Physicians; it has never, however, been carried to such an extent as to produce any real benefit. I believe the greatest safeguard consists in the improved education of the persons who deal in medicines, and in such means as may tend to raise their position, and teach them that it is

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their interest as well as their duty to sell as good articles as they possibly can. I believe, in that respect a very great improvement has taken place, and is taking place every day, from the improvement of the qualifications of the pharmaceutical chemists.

2385. Should you be disposed to rely upon that gradual improvement from within, or do you think that, for instance, giving greater efficiency to the inspection of the College of Physicians, which you have described as to a considerable degree inoperative, would be more desirable?—I would not altogether rely upon what is going on within, because I think it might be well that there should be some easy and inexpensive means of punishing direct and absolute fraud; and I think that the respectable chemists would assist the Legislature in bringing to light anything which was so disgraceful as to injure the character of the body. In that way, all respectable chemists would assist the Legislature in exposing that which is the means of those unpleasant statements being made, reflecting upon the entire body.

2386. You look upon exposure as even more important than the actual punishment of the party?—I think the exposure is a very severe punishment indeed; it may ruin a man's business to have it reported that he is in the habit of selling adulterated articles.

2387. Would you prohibit altogether the importation of damaged and inferior drugs, though they may contain some of the requisite elements?—I think it would require a considerable amount of judgment in a person employed as inspector; it would be very desirable that a scientific man who is competent to judge should be employed to assist in a case of doubt: there may be a drug which is unfit for the ordinary purpose for which it would be used, but it might be fit for some other purpose.

2388. Damaged drugs, after being subjected to proper processes, might supply, though in smaller quantities, certain medical elements in perfect purity?—Yes; there are some damaged drugs which might be used, from which to extract some essential principle; for instance, you might get strychnia, or some of the alkaloids, from a drug which would be quite unfit for sale by itself, from its having been worm-eaten or in other respects injured.

2389. Have you considered the result of prohibiting the importation of damaged drugs as necessarily raising the price of those essential principles in the drugs, by preventing the employment of any but uninjured, and therefore the dearest, drugs in their production?—I do not think that such prohibition would produce a serious effect in that way; I think if there were a demand, a supply would come to meet it.

2390. If every country prohibited the importation of drugs which were at all damaged, a quantity of damaged drugs still containing a large proportion of useful and beneficial principles would be altogether wasted and neglected; whereas by inspection in the druggists' hands, the object would be to secure the public against receiving drugs in a damaged state?—A good deal of opium is imported which is unfit for sale as opium, but it may contain a sufficient quantity of morphia to make it quite worth while for manufacturers to purchase it; but then it adds to the difficulty of the case. It was always a difficult case, and always will be; all we can do is to approximate towards a mode of checking the evil; we shall never entirely prevent it.

2391. The objection to the sale of impure drugs does not necessarily apply to the importation of damaged drugs; has it occurred to you that there is any reason why a system of inspection of articles before they come into the hands of the public, should be on the whole preferred to a system of inspection of articles on their way to the chemists and druggists who prepare them for the use of the public?—I do not see how an inspection could take place, unless it were at the docks during the time a drug is being imported, or in the shop to which any person can go and ask for a certain article, and pay his money for it. Having obtained it, he can examine it, and if he find it impure, if it can be proved that the person who sold it, did so, knowing it was unfit for sale, he ought to be liable to punishment. I think it ought always to be the case that it should be required to be proved that the person knew the article to be bad.

2392. Mr. Gregson.] The ordinary custom-house officer is not capable of making such an inspection, is he?—A great many persons have been educated, and there is a school in London for the education of persons, to assist in the

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Inland revenue; and if there were such officers required, it would be easy to multiply them to any extent.

2393. Mr. Knight.] It would be almost impossible to decide whether a person knew that an article was an inferior article, would not it?—It might be very difficult, but when you bring into operation a penal law, I think there ought always to be some consideration for the existence of a doubt, and the doubt ought to be given in favour of the accused.

2394. Viscount Ebrington.] Do you think it would be possible, with proper precautions, to give the country the benefit of the damaged drugs to be used, not in their damaged state, but for the preparation of perfectly pure medicaments to be extracted from them?—It is quite possible.

2395. It is undesirable that damaged opium should be sold as good opium to the public, but there may be a certain quantity of morphia to be extracted in perfect purity from damaged opium; have you considered how the public health may be protected, and yet the public not be deprived of the advantage of the importation of damaged drugs to be used for the purpose of furnishing only pure extracts?—I believe that no inspection could insure everything imported being of the first quality, but it would certainly prevent the importation of a great many things which are now imported, and which are absolutely worthless. When Sir Robert Peel took off the duty from a great many drugs, which many of us thought was a very injudicious measure, there were a number of perfectly useless drugs, jalap for example, which had been in the docks for years because they were not worth the duty, but which were immediately sold and went into stock; we suppose that they went to the mill.

2396. Mr. Wise.] You have alluded to what has been termed the rage for cheap medicine; do you think that that rage has a tendency to increase the consumption of what are commonly called quack medicines?—There is a very great rage for quack medicines; people do not mind what they pay for quack medicines; for secret medicines there is an opportunity of charging whatever persons like to ask for them; the demand for cheap medicines exists to a great extent, but that does not so much apply to quack medicines; where the imagination is concerned, and people are determined to have the thing, and they can get it at a particular price, they pay the money. If you want a box of Dickson's pills, you must pay 2s. 9d., and the public pay it; if it were to be had for any price, from 2s. 9d. to 1s., the great majority of persons would prefer giving 1s.; so it is with ordinary drugs.

2397. Do you think the adulteration of drugs arises from the demand for cheap medicines, or from intentional dishonesty on the part of the persons selling?—From both; the primary cause being the demand for cheap medicines. There are some persons who will always endeavour to increase their profit by however unfair means.

2398. Do you think there should be any check upon the sale of these secret medicines?—I think they do an immense deal of mischief; they are given indiscriminately for every complaint, and it is impossible they can be useful to the extent to which they are recommended in the printed bills which accompany them.

2399. Is it possible to discover what they are made of?—In some cases they can be partially analysed, but vegetable substances cannot be analysed with the accuracy with which minerals can.

2400. Chairman.] Are you of opinion that any law could be made applicable to the sale of what are called quack medicines?—I think that is a subject which requires a great deal of consideration; the extent to which quack medicines are encouraged by the Legislature, and a tax levied upon them, is very great; they are encouraged for the sake of the tax.

2401. Viscount Ebrington.] It is your impression that the Royal arms and that kind of insignia on the box has the effect of encouraging the uneducated to purchase what is deleterious?—There is a disposition to buy anything which has a mystery attached to it.

2402. Mr. Gregson.] Does not the imposition of a tax rather discourage them?—The tax recognises them; it gives them a kind of authority. If it were not for the tax, I think something would have been done a long time ago to place a check upon the manner in which the public is imposed on by many of these quack medicines.

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2403. Chairman.]

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2403. *Chairman.*] Have you any idea yourself what course it would be desirable to take for the purpose of superintending this issue of quack medicines, and making it innocuous?—I think the law in France upon the subject is judicious; there they are made illegal, and it is necessary for any persons selling such medicines to publish to certain authorities what the composition is. I think some law of that kind might be judiciously introduced here.

2404. *Viscount Ebrington.*] The seller divulges the composition of the medicine to a few chosen persons?—Yes.

2405. *Mr. Wise.*] How is it that the inspection by the Company of Apothecaries has fallen into disuse in the metropolis?—They can only inspect the shops of apothecaries; they cannot inspect the shops of chemists and druggists. That has fallen into disuse. They have been gradually going away from pharmacy, leaving it to chemists and druggists, in proportion as they have been becoming medical practitioners, and they have not taken the great interest in the progress of pharmacy which they formerly did. I believe the inspection is carried on to a certain extent, but it is rather a matter of form.

2406. Does not that render it still more necessary that chemists should be licensed?—It is what we have been for 16 years endeavouring to bring about; the importance of the subject has scarcely been recognised till this Committee has shown the absolute necessity of some interference. That was primarily the object of the union of chemists in forming the Pharmaceutical Society.

2407. The object which the Committee has in view, you think, would find a ready support on the part of the Pharmaceutical Society?—The Pharmaceutical Society will do everything they possibly can to assist the object for which this Committee has been appointed, and any law which might be prepared, if referred to the council of that society, would meet with every attention; and I have no doubt some practical suggestions might be obtained from that quarter.

2408. *Mr. Gregson.*] Do you think the inquiry before this Committee has had any tendency to reduce the extent of adulteration?—I do not know that it has; there has been very little elicited by the Committee which we did not know years ago, though the public did not know it. Upon looking over the numbers of this journal, I found a great deal which has afterwards been brought up in this Committee as something new. For fifteen years it has been continually coming out by dribblets.

2409. Has not much more publicity been given to the subject by the labours of this Committee?—Yes.

2410. *Mr. Wise.*] Having made this inquiry, do not you think it would be very injurious to the public interests if something be not done by the Legislature?—I do not think any harm has been done by the inquiry, whether any law be introduced or not; still, I think it is desirable that there should be some legislative measure.

2411. Those statements having been made, and in most cases proved, do not you think it would have a tendency, if nothing be done, to encourage adulteration?—I dare say some persons have been taught how to adulterate in a manner they had not practised before. I think it would be very desirable that some means should be taken to check it. There has also been a good deal of exaggeration, and an attempt to frighten the public to an extent which, I think, was not required, which has, to some degree, done mischief.

2412. Do you think the public can protect itself?—It can, to a certain extent, but not entirely. It requires the co-operation of the Legislature with the persons engaged in the respective businesses, in order that the honest men may combine together to expose and punish the rogues; and I believe you will find in every trade the respectable portion of the trade would be glad to facilitate any means that might be proposed by the Legislature, and would give practical suggestions as to drawing up any Act which might be introduced on the subject.

2413. *Viscount Ebrington.*] You do not believe that the maxim of *caveat emptor* is the one which the more respectable members of the trade would desire to be the only one relied on?—I believe, to a great extent, it is all which can be done; but when fraud or adulteration is perpetrated in a very scandalous degree there ought to be some means of punishing it.

2414. *Chairman.*] Adulteration, in fact, has become such a science, that it requires something more than common sense and ordinary observation to detect it?—It has, in some cases.

2415. Mr.

2415. *Mr. Moffatt.*] The Committee are to understand your evidence, in reference to adulteration, as merely confined to the drug trade?—I have chiefly confined my remarks to the drug trade.

2416. In reply to the various questions which have been put to you, you intend your observations to apply to drugs, do not you?—Yes. There are some remarks which would be applicable to other trades; but I have been chiefly speaking in reference to my own department.

2417. *Viscount Goderich.*] I presume, inasmuch as you consider adulteration dishonest in the drug trade, you would consider a similar adulteration dishonest in any other trade?—Yes, of course the same principle applies to all.

*William B. Carpenter, M.D., called in; and Examined.*

2418. *Chairman.*] YOU are connected, I believe, with University College?—I am Examiner in Physiology in the University of London, and Professor of Medical Jurisprudence in University College.

2419. In reference to your professional duties you have probably had your attention called a good deal to the question of adulteration?—I have not had much practical experience in the examination of adulterated articles. I have had occasion, however, to consider the question as a part of sanitary legislation to a great extent.

2420. Will you state to the Committee what conclusion you have arrived at as to the prevalence of adulteration, and its effects upon the public health?—I think there can be no question that there is a large class of articles of food adulterated with substances which are injurious to the public health. This frequently is done in ignorance. For example, in the case of the introduction of copper into pickles, I believe it has been done ignorantly in a large number of cases. The adulteration of bread with alum, I think, to the extent to which it has been sometimes carried, is extremely injurious; and as some of the witnesses doubted whether alum could be found crystallized in bread, I wish to mention that I found it so in one instance, in which it crunched between my teeth; that was a case of bread supplied by a respectable baker for use at my own table.

2421. Do you believe that alum is injurious to the human system?—Its principal injury is the astringent effect it exerts, tending to produce that costiveness which is a very common complaint in large towns.

2422. The continuous use, day after day, of bread mixed with alum, even in small portions, would necessarily be injurious to the health of those who consume the bread?—I think so, decidedly.

2423. What proportion do you think would be injurious?—I should say any proportion would be injurious used constantly, day after day.

2424. Do you think the effect is cumulative?—No; but it tends to produce a habit in the system.

2425. *Mr. Wise.*] Does alum, of itself, supply any want in the human frame?—No; I think I may say certainly it does not.

2426. Is the alum in bread, though dissolved in the baking as it is stated to be, digested?—It would be dissolved in the juices of the stomach, and absorbed into the blood; it would not undergo any change.

2427. If received into the system, it must be expelled?—It is expelled through the urine probably.

2428. In your opinion, alum after it is baked does not adhere in any form to the coats of the stomach?—No; I should think it is taken into the blood. It is a very soluble substance, and the quantity of gastric fluid in the stomach is so large, that at a temperature of 100 degrees, it must be dissolved and absorbed into the blood.

2429. *Chairman.*] Have you ever found any bread sold by bakers in London, which has not had alum in it?—I have not made extensive inquiries. When I remonstrated on this occasion with the baker, he made the excuse that it happened to be a batch of bad flour which would make ropery bread, and he had put more alum than usual to correct that.

2430. *Mr. Moffatt.*] You must be aware that it has been the practice for the last quarter of a century for bakers to put alum in bread in the metropolis?—I am quite aware of it.

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2431. And the inhabitants of the metropolis consume that bread daily?—Yes.

2432. Do you think many persons have their health injured by it?—One of the most common complaints is a habit of costiveness; and I think the alum in bread has something to do with it.

2433. Have you had any experience of other large cities, as to the prevalence of the same complaint there?—I cannot speak of my own knowledge. I believe it is the practice in most large towns to use alum.

2434. Is it within the experience of medical men that the malady you have alluded to is peculiar to London?—It is not; but it is a malady of towns rather than of the country.

2435. And you attribute that to the use of alum in the bread?—I think that is one of many causes.

2436. Viscount *Ebrington*.] There is much ill health in London, and so many causes producing it, that you would be slow, probably, to name any one as the sole cause of the excessive mortality in London?—The mortality is quite a different question; it arises from a different set of causes; but habitual costiveness, which is one of the commonest complaints a medical man has to deal with in large towns, I think arises from the use of alum, to some extent. I know many instances in which it has been removed by the disuse of baker's bread, and the employment of home-made bread.

2437. Mr. *Moffatt*.] Is alum generally used in bread in the large towns of England other than the metropolis?—I believe, generally speaking, in all the large towns it is. You will find different classes of bread in those towns. Many bakers will put up "country bread," meaning that they are not particular as to the whiteness and crispness of the bread. Bakers believe that their customers like white and very crisp bread, and it is to make that bread that alum is chiefly employed. What is called household bread is of a darker colour and not so crisp in its texture.

2438. You have no practical experience in regard to the use of alum in bread out of the metropolis, have you?—No.

2439. Viscount *Ebrington*.] At the same time, it is generally notorious to any one who has travelled through the United Kingdom, that the bakers' bread in towns is very different from what you get in private houses, whether of the gentry, the farmers, or the labourers in the country?—Certainly.

2440. *Chairman*.] Would you infer that the mixture of alum is more common in the inferior kinds of bread than in the better kinds?—Yes; because the bakers themselves allow that they mix it with flour which would not otherwise make good bread.

2441. I suppose in those parts of London where the bread is sold at a lower price than in the richer portions of the town, the bread will be more adulterated with alum, and therefore more injurious to the poor population?—Yes.

2442. Mr. *Wise*.] You say you believe that bread is commonly mixed with alum; are you aware that by an Act of Parliament, passed in the reign of George the Fourth, alum is prohibited from being mixed with bread?—Yes.

2443. How do you account for the prevalence of the custom notwithstanding that Act of Parliament?—We find that to enforce the Act takes trouble, and a great many persons are disposed to put up with evils of which they do not feel the immediate consequence.

2444. If an Act of Parliament exists prohibiting the use of alum in bread or flour, but permitting the use of barley or peas, or Indian corn, if the bread be marked "M," what remedy can you suggest which would enable the public to enforce the law?—I do not think the public will ever take this matter into their own hands. I believe that some Government agent should be appointed as an instrument for maintaining the observance of the law.

2445. You are in favour, therefore, of an inspection of flour and bread, such as exists in Paris?—Yes; while there is a law, I would have the Government take care that it is enforced.

2446. Mr. *Moffatt*.] Why will not the public take the remedy into their own hands?—Because to do so takes a great deal of time and trouble. I can illustrate this by a case of a nuisance which was very obnoxious in my own neighbourhood, a cow yard close by the University Hall. It took me a great deal of time and trouble to get a very qualified abrogation of that nuisance; so much time and

and trouble, that I really preferred to put up with the nuisance than undertake the task of its removal.

2447. In a case such as you assume, of the existence of a general adulteration of bread, if the public were aware of it, and preferred brown bread, would not there be plenty of venders of brown bread?—The public decidedly prefer a white bread, and the poor especially.

2448. Are there not hundreds of shops in London where you can buy brown bread?—Yes.

2449. Is not it quite optional with the public to have that bread if they please?—I think the poor have a prejudice in favour of white bread.

2450. Viscount *Ebrington*.] The whiteness of the bread is not necessarily evidence of its adulteration, is it?—No.

2451. Mr. *Moffatt*.] Do you know whether alum is used in the bread in Paris?—I cannot say.

2452. Viscount *Ebrington*.] As a general principle, do not you consider it desirable that some persons should be specially appointed to perform on behalf of the public duties which must necessarily involve a great deal of time and trouble on the part of individuals?—No doubt of it.

2453. Has not that principle been recognised in the case of stamping coin, which is, after all, only a commodity consisting of gold and silver, but the measuring and assaying of which would be practically so troublesome, that the Government has intervened; and do not you conceive that the same principle may legitimately be carried out in the case of other commodities besides gold and silver?—Certainly; the principle is carried out in regard to meat, and tolerably strictly, I believe; and the same principle applies to other articles of consumption.

2454. *Chairman*.] Have you any information to give as to other articles of diet?—I was employed by the Chairman of the Board of Inland Revenue, a few years ago, to make a report as to the ordinary process of sugar-refining. I mention the subject because I believe that publicity did there answer the end. The question was, whether a process which involved the introduction of acetate of lead should be permitted; the result of chemical analysis showing that a minute quantity of sulphite of lead was found in the treacle. The question submitted to myself, along with the late Dr. Pereira and Dr. Alfred Taylor, was, whether we considered that that quantity of sulphite of lead was likely to be injurious to the consumers, the inventor of the process, Dr. Scoffern, maintaining that it was perfectly insoluble, that it was like so much chalk. We reported that we considered that there was the same likelihood of injury, that there was from any other salt of lead. Our Report was very much called in question by those who were interested in the invention; but it put the trade on their guard against it, and I believe there is no house now carrying on this patent in this country. I may mention, in confirmation of our conclusion, that only last year a gentleman from Ceylon informed me that a detachment of 30 soldiers, in one of the up-country stations, had shown characteristic symptoms of poisoning by lead; the medical officer made very careful inquiries, and could attribute this lead-poisoning to nothing but the sugar; and upon carrying out those inquiries, he found that this sugar was made by Scoffern's process, in Ceylon.

2455. Mr. *Moffatt*.] The result of that discovery or analysis led to the whole of the sugar-refining trade of this country refusing to employ Scoffern's patent?—Yes; it was greatly discredited at once.

2456. And it is not now employed by any refiner in England, Scotland, or Ireland?—I believe not.

2457. Viscount *Ebrington*.] But that inquiry and report of yours was occasioned by the Government of the country taking the question in hand?—Yes. I may mention that the process by which that came about was this: I am not sure the Government would have taken it in hand, if this question had not come before them: two of the colonial legislatures were considering the propriety of refusing to admit Scoffern's process; Antigua had passed an Act prohibiting its introduction, and Demerara seemed about to do it. An Act was sent home from Antigua, for the assent of the Crown, and before giving its assent, the Crown instituted this Commission.

2458. You mean that two of the colonial legislatures wisely considered the subject was not beneath the notice of Government, and owing to their initiating

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the matter, the Imperial Government was obliged to look into it, and the consequence was the satisfactory result which you have just mentioned?—Yes.

2459. *Chairman.*] Are there any other articles which have come under your notice?—I was requested by the Chairman of the Board of Inland Revenue, about three years ago, to make inquiries as to the admixture of chicory with coffee. At that time the Treasury Minute of Lord Derby's Government was in force, prohibiting the mixture of chicory with coffee. The Chairman of the Board of Inland Revenue, at the desire of Mr. Gladstone, wished new inquiries to be made, and it was referred to Dr. Alfred Taylor and myself to make those inquiries. We concurred in recommending to the Government the present system; that is, that a distinction should be made between pure coffee and the sale of coffee mixed with chicory.

2460. You saw no objection to the admixture, provided the public were led to purchase the article with the knowledge that it was not pure?—No objection.

2461. *Mr. Moffatt.*] You saw a benefit to the public in giving that permission to sell the two articles mixed, inasmuch as they could by that means get an article which would answer their purpose at a lower price?—We came to that conclusion; I made very extensive inquiries among the trade, having for nearly 20 years taken an interest in the subject. I have been in the habit for a great many years of seeking after good coffee; wherever I could find a good cup of coffee was to be had, I have been in the habit of obtaining it. For example, it was well known a few years ago that in Fleet-street there was a particular shop to which the lawyers from Chancery-lane were in the habit of going to get good coffee; I was recommended to go there, and I have no hesitation in saying that every cup of good coffee I have known to be sold, has had chicory in it.

2462. *Chairman.*] The objection you had to the employment of chicory was that it was sometimes sold as a pure article when there was a mixture?—Yes; I would have printed on the label which contains the pure coffee the very simple test by which anyone may find out whether there is chicory mixed with it.

2463. *Mr. Moffatt.*] What is that test?—Sprinkle the powder upon a wine-glass full of cold water; if there is chicory mixed with it, the water is coloured in the course of a minute or a minute and a half; but if it is pure coffee, the water has no considerable tinge for four or five minutes.

2464. This excellent coffee which you got in Fleet-street, you believe was mixed with chicory?—I have no question that it was.

2465. *Chairman.*] If I understand rightly, under the present state of the law you do not ask for coffee simply, but you ask for pure coffee?—I do not think the law applies to sellers of the beverage.

2466. *Viscount Goderich.*] I understand you to say that this coffee was prepared for drinking; you were not buying coffee to take home for your own consumption?—Quite so.

2467. *Mr. Moffatt.*] You believe it is a public advantage that there should be this adulteration of coffee with chicory?—Yes; I have for several years been in the habit of having large parties of friends in the public rooms at my disposal, and I have been often asked, "Where do you get your coffee? we never procure coffee so good anywhere." My practice has always been to purchase the best coffee, and mix one-eighth of chicory with it.

2468. *Chairman.*] You purchase them separately?—Yes.

2469. *Mr. Gregson.*] Beyond one-eighth you do not think it desirable to mix chicory with coffee?—The proportion differs with the quality of the coffee. I satisfied myself that a mixture of more than about one-eighth with the best coffee deteriorates it. The pure aroma is covered by the strong bitter of the chicory; but, on the other hand, a much more palatable article may be sold at 1 s. a pound by the mixture of three-quarters of a pound of coffee, at 1 s. 3 d., and a quarter of a pound of chicory; and that is a very important point with regard to the consumption among the poor; coffee at 1 s. a pound is constantly asked for by them; many of them will not give more than that price, but no good coffee can be sold at 1 s. a pound.

2470. *Mr. Moffatt.*] Can any sound coffee be sold at 1 s. a pound as the market price?—I cannot undertake to say whether sound coffee could be sold at that price; it would be an exceedingly flavourless article.

2471. *Mr. Wise.*] Have you heard that acorns, and parsnips, and carrots are dried

dried and ground and mixed with chicory?—I have heard so. I have had no personal experience to that effect.

2472. *Viscount Ebrington.*] You lecture on forensic medicine, do not you?—Yes.

2473. Has the question of adulteration ever occurred to you in another point of view; do not you consider that the habits of fraud and lying which are engendered by the extensive practice of adulteration are calculated to act injuriously upon the general standard of morality and fair-dealing in the country?—I think decidedly so.

2474. *Mr. Moffatt.*] Have you considered what are the best means of putting down the system of adulteration?—The system of Government inspection, I think, is the only method.

2475. Have you made any calculation what would be the amount of the staff likely to be requisite for an efficient Government inspection?—I heard Mr. Wakley's evidence, and I would say that I think it would not be possible to obtain the services of gentlemen really qualified throughout the country, except at a very heavy cost indeed. Men must be specially educated for the purpose, and it has always occurred to me that a central board in London, samples being purchased and sent up to London, would be a much cheaper method. When the inspector became known, the retailer would have one sample for the public and another sample for the inspector; he must therefore employ buyers for him.

2476. Have you made any calculation as to the number of persons that would be employed to make an efficient and constant survey of all goods sold by the vendors in the hundreds of thousands of shops in the United Kingdom?—I have not.

2477. *Mr. Gregson.*] Would not the existence of such a body of inspectors prevent adulteration, tradesmen knowing that they might come accidentally into any shop at any time?—I am quite certain that it would; I have been assured by the Board of Inland Revenue, that in many instances where the Excise has prosecuted, and where any publicity has been given, there has been immediately a great improvement in the samples of the particular article.

2478. *Viscount Ebrington.*] Without being sanguine enough to believe that a total and entire check could be put upon those practices, which are, many of them, injurious to health and all of them to morality, you believe that practically a great deal of discouragement could be given to those practices, and they could, to a considerable extent, be prevented very much, as crime is prevented to a considerable extent by the police, without being altogether put down?—Yes.

2479. And that at a moderate cost?—I think at a moderate cost, using the machinery which at present exists, namely, the machinery of the Excise with the addition of highly qualified examiners to examine samples. There are certain things in which there is very little difficulty in detecting adulteration, but there are others in which it is a matter of very great nicety; I wish to state that that nicety has not always been exercised in the published statements. The case which Mr. Wakley adverted to just now, was one in which I was myself employed; at least I presume it to be the one adverted to. I believe his memory failed him as to the article, and that it was not cocoa, but chicory; the individuals were the same, Messrs. Fry, of Bristol. Dr. Hassall charged Messrs. Fry with the adulteration of chicory to a large extent with roasted corn. I mention this not with any view to throw odium upon Dr. Hassall, but because I think the Committee ought to be aware of the extreme difficulty there is in many cases in obtaining an accurate analysis, the time it involves, and the mistakes which may occur even with good intentions, for I believe Dr. Hassall to have gone into the matter with very good intention. The number of analyses he published per week could not have been made with the requisite care by one or by half-a-dozen persons.

2480. *Mr. Moffatt.*] Will you state the number of analyses which Dr. Hassall states himself to have made in any given period, and the length of time they would have taken if made carefully and accurately?—There were published in many weeks 20 or 30 analyses as the result of that week's work.

2481. Would it be practicable for any gentleman analysing such articles as you describe to have made that number of analyses?—Not a single person.

2482. *Mr. Gregson.*] Perhaps Dr. Hassall employed several persons?—He employed

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employed one or two to assist him in some of the details of chemical analysis; the main body of the microscopical examinations were made by himself.

2483. Mr. *Moffatt*.] Dr. Hassall was not the first person who directed his attention to this subject, was he?—I think reports had been made by Drs. Lindley and Hooker to the Government upon some of these adulterations before Dr. Hassall took up the matter. I will not be certain about the dates.

2484. Mr. *Wise*.] Dr. Hassall was assisted by a great number of other persons, was not he?—Not, I believe, in the microscopical examinations.

2485. Mr. *Moffatt*.] Did you find any other articles in which there was an error in the analysis reported by Dr. Hassall?—Yes; there was one which was a chemical one, showing the necessity for very great care; that was a case in which he stated that vinegar had sulphuric acid in it; the vinegar manufacturer, though sulphuric acid is a legitimized mixture up to a certain point, was very anxious for the credit of his article; and he obtained an analysis by some of the first chemists, who said it was true that there was sulphuric acid present, but no more than the water, which was a very hard water, contained.

2486. Viscount *Ebrington*.] In substance, therefore, Dr. Hassall's statement was borne out?—There was sulphuric acid, but in the state of sulphate of lime.

2487. Mr. *Moffatt*.] There was no more sulphuric acid in the vinegar than could have been obtained from the same quantity of water under similar conditions?—No.

2488. Mr. *Gregson*.] Can you suggest any means for the prevention of these adulterations?—My impression is very strong that a Government inspection is required; a great number of persons would have complained of the charge made against them if it had not been for the expense and trouble of doing so. In this case of Messrs. Fry they paid 120*l.* to the gentlemen whom they employed to investigate, besides the legal expenses, and at last they obtained an acknowledgment from the "*Lancet*" that a mistake had been made.

2489. The "*Lancet*" published a great many names and addresses of parties?—Yes.

2490. Did any of those persons bring actions against the "*Lancet*"?—Messrs. Fry did not bring an action, and the reason which operated with them would operate with others, that they could not prove special damages.

2491. Mr. *Moffatt*.] There might be real damage, though they might not be able to prove it?—Yes.

2492. Viscount *Ebrington*.] The impression on your mind is, that both for the sake of justice to the dealer and justice to the customer, so delicate and difficult and expensive a process as analysis should not be left to the accident of demand and supply, but should be undertaken by certain properly qualified and responsible persons?—Yes, decidedly.

2493. The difficulty and expense attending these analyses, if they act as a discouragement to dealers, on the one hand, to vindicate their character, act at least to an equal extent, if not to a greater, on the public, in discouraging individuals from taking up for public good such inquiries as these?—Exactly so.

2494. Mr. *Moffatt*.] You have made no estimate as to the cost of such a supervision, or the means by which it is to be carried out?—No; but I feel certain that one or two superintending analysers, with a staff under their own constant supervision, would carry it out much more cheaply and certainly than a number of separate individuals throughout the country.

2495. Your plan would be to have men of great eminence as analytical chemists, and that they should employ under them probably 2,000 persons, as a staff for the country?—I think it would be a cheaper plan that the analytical operations should be carried on in London.

2496. You would recommend the appointment of an Analytical Board in London, to whom all samples should be referred?—Yes.

2497. To obtain those samples, would you employ the machinery of the Inland Revenue?—For articles of food I should; the question of drugs is a distinct one.

2498. Everything which people eat, drink, and smoke, you would recommend should be put under the Inland Revenue Department?—Yes; I think with regard to drugs they might be more properly left to a medical inspector.

2499. Mr.

2499. Mr. *Wise*.] You would enlarge the sphere of the detective and analytical department of the Excise?—Yes.

2500. In minor matters, perhaps you might satisfy yourself with publishing, as the French do, on the 1st of January in every year, special regulations as to the use of colouring matters and things of that kind?—Yes.

2501. Mr. *Moffatt*.] Would you propose to meddle with adulterations which are not injurious to health; for example, putting rice into pepper?—That is rather a question of revenue; I think there is a difference in articles according to whether the public can protect itself or not; in coffee I think the public can protect themselves quite enough; they can protect themselves just as well against the admixture of chicory, as against having a poor coffee supplied to them.

2502. What is the general description of the articles you would propose to protect the public in?—I would protect all articles from any admixture which is injurious to health.

2503. Would you extend your surveillance beyond that?—I do not see that it need be extended beyond that which is at present carried on for revenue purposes.

2504. Mr. *Gregson*.] You would not attempt, perhaps, to prevent the deception of selling articles under a false name?—I think it would be quite right to do so, just as in the case of chicory and coffee.

2505. Viscount *Ebrington*.] Though your views would chiefly be directed to the preservation of the public health from the consequences of adulterations injurious to health, you would recognise fraud as a thing to be exposed and punished as such, quite irrespective of sanitary considerations?—Clearly so; if you ask for a gold chain and are supplied with one which is two-thirds copper or silver, it is a fraud.

2506. Mr. *Moffatt*.] So you might ask for a silk gown, and it might be sold to you mixed with cotton?—I have not considered the question as applied to articles of that kind; I believe that there the thing is so well known to all buyers, that ladies qualify themselves to judge of the quality.

2507. *Chairman*.] Is not gold frequently sold of different descriptions of fineness?—The same principle would extend to that; it is a question of practicability.

2508. With reference to the morality of the mixtures, why should not you inspect silks and jewellery, as well as wine and beer, and coffee and so on?—I have only considered the matter in regard to articles of food.

2509. Viscount *Ebrington*.] As a general rule, you think it desirable that the purchaser should receive the article which the seller professes to supply to him?—Certainly.

2510. And that the poorer classes should have some speedy, and cheap, and simple remedy for bringing offenders to justice?—I think this of the highest importance.

2511. I understand that an action at law must now be brought for fraudulent adulteration; do not you think it would be very desirable to have some cheap and easy mode of summoning parties before a magistrate, with penalties for the first, second, and third offence?—I would go beyond that; a working man cannot afford time to attend before a magistrate.

2512. I am assuming a detective inspector to be appointed, who would be a witness in the case, to whom the householder might apply?—Yes.

2513. Mr. *Moffatt*.] Do not you think that that system of surveillance would be liable to great abuse; does not it appear to you that it would throw great power into the hands of persons who have no great amount of responsibility?—I think no more power than is involved in a great many other situations.

2514. What should you point to as an analogous case?—The switchman of a railway, for example; I think he has quite as much responsibility.

2515. Viscount *Ebrington*.] Is it impossible to give a reasonable amount of security by providing that there shall be two samples, one to be carried off by the informer, and the other to be left with the party; would the risks of injustice and false accusation be, in your opinion, so very great if that were done?—I think it might be easily guarded against by never proceeding upon a single sample, but by employing two buyers, who should check one another.

2516. There is no more danger of error to apprehend from bad intention in this particular case, is there, than is likely to arise from human frailty and imperfection.

W. B. Carpenter,  
M. D.

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W. B. Carpenter,  
M. D.

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imperfection in most other cases?—No; it arises at present in Excise proceedings. There are a great many articles to which, I think, the same principle that I speak of, with respect to coffee, applies; for example, sulphuric acid. The sulphuric acid of commerce is an impure article; but it is sufficiently pure for all ordinary purposes; but if I want sulphuric acid so pure as to serve for chemical testing, I must ask for it as pure sulphuric acid.

2517. Mr. Swift.] From your experience on the subject of adulteration, is it your opinion that the adulteration of food has increased during the last 25 years?—I cannot speak with any certainty on that point.

2518. Do you think there has been any increase within the last few years?—Yes. I think the publicity given by publications 15 or 20 years ago has led to a great many practices becoming general which were not so general before.

2519. Do not you think that the circumstances of the poor have led very much to public competition, and to tradesmen endeavouring to produce an article at the lowest possible price, and that that is one cause of a considerably increased amount of adulteration?—I think there are a great many causes which have led to it; the congregation of the poor in particular neighbourhoods, for example, in which there are not any large and respectable tradesmen. I have satisfied myself of this; and it was particularly the case with regard to chicory and coffee, that where a dealer sells a really good article, at a moderate price, in a poor neighbourhood, the poor will find it out, and will come to his shop; but I believe there are extensive neighbourhoods in which the poor, without going to some distance, have not the power of buying to advantage; there is only a low class of tradesmen in the neighbourhood.

2520. Is the adulteration carried on by them, do you think, or by the wholesale dealers of whom they purchase?—I cannot say.

Veneris, 4<sup>o</sup> die Aprilis, 1856.

#### MEMBERS PRESENT:

Viscount Goderich.	Mr. Wise.
Mr. Cowper.	Mr. Moffatt.
Mr. Alderman Cubitt.	Mr. Gregson.
Viscount Ebrington.	Mr. Peacocke.
Mr. Kinnaird.	Mr. Otway.
Mr. Charles Villiers.	

VISCOUNT GODERICH, IN THE CHAIR.

Mr. Joseph Woodin, called in; and Examined.

Mr. J. Woodin.

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2521. Chairman.] YOU are in trade as a Grocer and Teadealer, are you not?—I am.

2522. How long have you been engaged in that business?—I have been in the trade 25 years, but the particular trade that I am now conducting I have been in about five years.

2523. What is the trade which you are now conducting?—It is called the Co-operative Central Agency.

2524. Will you state to the Committee the nature of that agency?—The agency was commenced some six years ago by some gentlemen who were anxious to put a stop to the practice of adulteration. The exposures of the "Lancet" had proved that adulteration was going on to a great extent, and the Government of the day had declared that they did not mean to interfere, and that the doctrine of *caveat emptor* must apply. As those gentlemen considered that the public could not protect themselves, they thought some business should be started, on the principle that was adopted in the country districts, where a number

number of men are combined together. When the truck system was abolished, they combined together to buy their goods wholesale, and serve themselves, so as to protect themselves from fraud. The gentlemen that commenced the agency thought the same system could be adopted in London, so as to enable the consumers to protect themselves in London, as well as in the country.

2525. You undertake therefore to supply them with unadulterated goods?—We do. I was not in the agency when it was first started; the founders thought they could conduct it without any person connected with the business. I was in business for myself at the time; they found that they required some person that understood the business, and they made overtures to me, and I took the management of the business.

2526. How long were you in business on your own account?—My answer applies to the time I had been in business before I undertook the management of the agency; three or four years.

2527. Are you able to state to the Committee whether adulteration in groceries exists to a considerable extent in this country or not?—It does. I should wish to describe the state we found the trade in when I went into it. When I first undertook the management of the stores there were a number of those stores in the country, and the gentlemen who started the agency thought they would be much benefited by buying all their goods from one common centre, and that was one of the reasons for starting the agency. The first thing which they did was to send down to those stores to supply them. Some of our gentlemen had called at one of those large stores for orders, and the storekeeper stated that the members of the store were going to have a tea party, and that was a favourable opportunity for trying our tea; they gave us an order, among other things, for a chest of the finest green tea that could be got, leaving the price open; the tea was bought; it was pure green tea, with as little colouring as could be got; it was sent down to them, and the gentlemen, in a few days, called on their return home, and asked how they liked the tea; they did not meet with a very civil reception; they were told they need not call there again; the tea sent was so very inferior that they could not think of giving another order. They wanted to know then what was the matter with the tea, and the storekeeper went and put his hand into the canister, and showed them a sample of very vivid green tea; he said that is the sort of tea we have been accustomed to have; you have actually charged 6d. a pound more than we have been paying for this tea. Those gentlemen did not know anything about the tea trade; so they forwarded a sample to me, and I saw there was no green tea in it; it was painted black tea, there was not a particle of green in it, and the only way we could convince the store people was by buying tea to match their own; they could not believe that theirs was inferior tea to ours; because theirs was such a much brighter colour; we had given 3s. 1d. a pound for our tea, and the tea we bought to match theirs we gave 1s. 3d. for, so that they had been paying five guineas upon a single chest of tea more than the value.

2528. You state that in order to show that the practice exists in the trade of selling coloured black tea as green tea?—Yes. At that time we found the same practice existing through the country. Wherever we went into the manufacturing districts, they would not look at the true green tea, the gunpowder tea was, in many instances at that time, mixed with lie tea, similar to the samples I now produce; there was a portion of tea with it, but it was all very highly coloured (*producing the same*). They would not look at the genuine tea at all; they insisted upon having highly painted tea; and we found that we must either give up our idea of selling genuine goods or else enlighten the public on the subject. The gentlemen with whom I was connected stated to me that what was required was, not for any new facts to be shown to the people, but that the facts that were known to the tea trade, and also to the educated classes, through the means of the "Lancet," should be made known to the consumers in the manufacturing districts. I was commissioned to collect all the facts bearing upon the case, which I did, and published them in a book. I have the book here; it was published in 1851.

2529. Do you consider yourself able to speak as to the usage of the trade in these matters?—I know the practice that was existing at the time, and I have been in business ever since. I know the practice up to the present time. If

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you will allow me, I will read a few extracts from this book that will explain the state of the trade at the time that we published this book.

2530. Will you state briefly what you have to say about the existence of adulteration in tea?—"The adulteration of tea. It will be seen from the following evidence that tea is subject to a considerable amount of adulteration both in China and this country; but although a certain amount of adulteration is carried on in China, we should be doing an injustice to the celestials if we laid the blame entirely upon them. The evil owes its origin to and still depends for its perpetuation on ourselves. It is solely attributable to the competition among traders in this country. It is certain that the Chinese annually make for tea large quantities of leaves other than those of tea. They are also very expert at making common and inferior tea assume the appearance of the best, especially in green tea."

2531. Mr. Moffatt.] Have you ever been in China?—No.

2532. Do you state of your own knowledge what the Chinese do with respect to tea?—Yes, I do, from an examination of the samples after they come over here. "Common and damaged green tea, and also black tea, is treated in the manner hereafter to be described in the Canton factories, so as to resemble the finest hyson, ouchain, or gunpowder; they are also guilty of making 'lie tea.' This is made of a portion of tea-dust (the sweepings of the factories), and not a little dirt, sand, and sometimes spurious leaves, made into a mass with starch and gum, and either granulated or broken into fragments, and bloomed or painted to resemble tea; but all this is done by the dictation or with the knowledge of the British merchant. The Chinese do not impose this rubbish upon him for genuine tea; he knows it is rubbish when he buys it, and he pays only the price for rubbish. Neither is the dealer in this country imposed upon if he knows his trade. If he buys it, he buys it with a guilty knowledge; it is only the British consumer that is deceived and cheated. He asks the dealer perhaps for green tea, and the dealer gives him what in appearance is green tea, but the dealer knows at the same time that it is a mixture composed of damaged black tea, spurious leaves, sand, dirt, and paint. You may rest assured the Chinese themselves do not drink these spurious imitations, neither does the shopkeeper; on the contrary, he is perfectly aware of the deleterious ingredients employed and of their injurious effects on the health; but he is induced to make use of the fraud in order to compete successfully. He must at any rate appear to be as cheap, and if possible cheaper than his rivals. To the people of this country the importance of the suppression of this nefarious trade is greater than at first sight it appears to be, both on account of health and money. It unfortunately happens that there are no means of arriving at the exact quantity of Canton made green tea imported or consumed; but the most eminent brokers and persons best qualified to form a correct judgment, give it as their opinion that a full half of the annual importation of green tea is Canton made. The total quantity of green tea imported in 1850 was 8,286,532 lbs., and the quantity cleared for consumption was 9,737,555 lbs., and assuming that one half was Canton made, it will give us 4,143,266 as the number of pounds imported, and 4,868,777 consumed. To this we may add the imports and deliveries of scented caper, as the bulk of that tea is even more adulterated than Canton green tea. In 1850 there were 688,000 lbs. imported and 884,000 lbs. consumed; this will give us a total of 4,831,366 lbs. of Canton made tea imported, and 5,752,777 lbs. consumed. At least half of this quantity consists of the spurious descriptions; but the whole of it is sophisticated, and is a fraud on the consumers. The very best of it, that portion which really is tea, is a cheat; it is not the kind it appears to be; it is all highly painted or dyed, and is in most cases the very commonest descriptions made to resemble the better qualities. There is now scarcely any bohea or twankay imported (at least under those names) to what there was formerly. The Canton alchemists, with the assistance of the British merchant, have discovered the art of transmuting these common grades into young hyson, pearl leaf gunpowder, caper, &c. If we refer to the last year of the East India Company's charter, from 1st May 1833 to 1st May 1834, we find the quantity of bohea sold in England was 6,170,963 lbs., and of twankay 4,339,672 lbs.; in 1850, there was only 24,500 lbs. of bohea and 27,510 lbs. of twankay imported, the quantity of bohea consumed was 145,340 lbs., and of twankay 843,359 lbs. The question

question naturally arises, what becomes of the difference in quantity between the boheas and the twankays imported now and that which used to be imported in the Company's time? The solution of the question is, that bohea now finds its way here, partly in the shape of congou, but the bulk under the semblance of Canton gunpowder, young hyson, caper, &c.; the twankay is metamorphosed into hyson, imperial and superior Canton gunpowder, or young hyson. The fraud that is perpetrated on the consumer in the manner before described, is sufficiently reprehensible; but it is only a trifle compared to the injury that is inflicted on him by the use of the spurious kinds. It is bad enough to have the worst tea substituted for the best, but it is still worse to pay for swallowing dirt and rubbish as tea. We are within the mark in stating that half of the Canton made tea is spurious; we have seen that the total quantity consumed in 1850, was 5,752,777 lbs., and taking the half of that quantity as the minimum, we arrive at the fact that the people of this country pay for, and consume at least 2,876,388 lbs. of this spurious rubbish!!! and assuming that it is all sold to the consumer at 4 s. per pound (and much of it is sold at considerably above that price), we find that the people of this country are made to pay the enormous sum of more than 500,000 pounds sterling (!!!) for what is intrinsically worthless. The article can be bought in Canton at a few pence per pound, and the greater part of this price is paid for the labour employed to give these otherwise useless materials a marketable appearance. The consumer of this article do worse than throw away this large amount of money, for there can be no question, that as far as their health is concerned, they would be gainers, if they threw the whole annual importation of this rubbish into the sea, instead of allowing it to find its way into their stomachs."

2533. Chairman.] Do you believe that statement to be applicable at the present time?—Not to the same extent that it was then; there has been a marked improvement owing to the exposures that have taken place.

2534. When was that written?—In 1851. It was a correct statement of the condition of the trade then. We found, at that time, that we could scarcely sell genuine tea at all, and we were obliged to engage lecturers to go round the country, and explain the matter to the working classes; amongst others, we had George Dawson from Birmingham, to come to London to lecture on the subject.

2535. Mr. Otway.] Are you certain of the accuracy of the figures you have given, of the number of pounds of tea imported, and the number of pounds consumed?—I am certain as to the total quantities imported and consumed, but there is never any distinction made between Canton and true green tea. There are no exact means of finding the comparative quantities.

2536. You are certain as to the number of pounds imported, but the merit of that statement is the difference between the number of pounds imported and the number of pounds consumed; are you certain as to the consumption?—The imports and consumption are always to be ascertained. The figures were taken from the current statements published annually. I have provided myself with the ordinary sale lists, published the last month, which, if you will allow me, I will hand in. Now, you will find that there is no bohea imported as bohea. If you want to find the bohea you must come down to green teas. Under the head of Gunpowder, you will find "Fair to good and fine, 1 s. 4 d. to 4 s. per lb." This refers to true green tea. "Canton and twankay kinds, 10 d. to 1 s. 3 d. per lb." That means gunpowder tea made at Canton from twankay; twankay being the lowest kind of green tea. "Woping and bohea kinds, 8 d. to 9 d. per lb." That means gunpowder made from coloured woping bohea. The same three descriptions, that is, "Fair to good and fine," "Canton and twankay kinds," and "Woping and bohea kinds," are also applied in the brokers' lists to imperial and young hyson. It was stated here by a gentleman that there was no bohea or woping sold now; it is not sold as woping and bohea, but it has always been imported since the Company's charter has been done away with as gunpowder, young hyson, and imperial, and in the brokers' price currents each of these three kinds are described as being composed of bohea.—[The Witness handed in the Trade List.]

2537. Mr. Villiers.] For what purpose do you produce that list?—To show that the ordinary woping, bohea, and twankay, that in the Company's time used to come as woping, bohea, and twankay, and was sold to the public under their own proper names, are now sold under the titles of the better grades of tea.

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All the common tea which the Company used to import, as common tea, still comes into the country, but instead of being sold for what it is, as common tea, at a common price, it is sold for the finer kinds of tea.

2538. *Chairman.*] Do you mean that it is sold at a higher price?—It is sold to the trade for what it is, but the retailers sell it to the public for gunpowder, young hyson, &c.

2539. At the price of better tea?—At the price of better tea.

2540. Mr. *Moffatt.*] Will you define to the Committee the distinction between woping and bohea?—I can read you the Company's own description of it.

2541. Mr. *Villiers.*] Do you intend to prove that the retail dealers in tea practise a fraud upon the public by selling an inferior for a superior article?—Yes.

2542. Mr. *Moffatt.*] Will you define the distinction between woping and bohea, of your own knowledge?—I have never been to Canton, and therefore I cannot say what it is of my own knowledge, but I have sufficient evidence of the fact; woping tea, in the time of the Company, used to be grown as a coarse kind of tea in the province of Canton. It was so common that the Company's inspector declared that it could never be sold as it was.

2543. That is 24 years ago, is it not?—Yes.

2544. The Committee desire to know what is now current; will you define to the Committee what is the distinction between woping and bohea at the present time?—I must explain what bohea used to be, or the Committee will not know what it is now.

2545. I want your knowledge of what it is now; I do not care what it used to be 30 years ago?—There is no tea comes as woping; it all comes as gunpowder, young hyson, and the finer sorts.

2546. You believe there used to be two kinds, the one woping and the other bohea?—Bohea was composed of woping and common congou; the refuse congou that was not sold during the shipping season was called winter congou, and then the Company used to mix it with half woping tea; that was the Canton bohea that used to be imported.

2547. A mixture of winter congou and woping tea made the Canton bohea?—Yes; the Fokien bohea was grown in the Fokien district, and came to Canton in its original packages, and was reshipped in those packages, and never underwent any mixture at Canton, but the Canton bohea was mixed at Canton, and composed of old winter congou with an equal portion of woping.

2548. Do you know that of your own knowledge?—I have the evidence here of the Company's inspector.

2549. Do you intend to produce that evidence to show how the public are defrauded at the present time in tea?—I produce it only in answer to your question.

2550. Mr. *Villiers.*] Is bohea now sold at all?—Not as bohea; it is sold as green tea.

2551. Mr. *Otway.*] In fact the tea that used to be sold as bohea is sold under a different name at a higher price, and the public cannot obtain the ancient tea at the old price?—They cannot obtain it at all under its own name.

2552. Mr. *Cowper.*] It is not sent out of China as bohea?—No, not to this country; or if at all, in very small quantities.

2553. Mr. *Moffatt.*] How do you know that?—Because there is none in the list imported.

2554. How do you know that the woping tea which used to be imported by the East India Company is now exported from Canton and Shanghai under any other name?—Because it is quoted in the trade lists as woping and bohea, gunpowder, young hyson, and imperial. Woping is a district in the province of Canton, therefore woping tea is never exported from Shanghai.

2555. You say that no woping is imported, but the trade list says that it is?—As gunpowder and young hyson, not as bohea. There is another list (*handing in the same*). Those are all the green teas, and amongst them the "bohea kinds;" that means green tea made out of the kinds of tea that the bohea used to be composed of. The superior Canton is made from twankay, and is now sold as young hyson, imperial, and gunpowder. You will find there is just the same distinction; it has always been sold by the wholesale trade for what it is.

2556. Mr. *Villiers.*] Does the retailer sell anything as bohea now?—No.

2557. Mr.

2557. Mr. *Moffatt.*] Does the retailer buy anything as bohea?—No, not as bohea.

2558. Does not he buy it as young hyson?—Yes.

2559. The bohea tea, according to the price current here, fetches from 5 *d.* to 6 *d.* a lb.; are you aware what price the Company's bohea used to fetch?—Yes.

2560. How much?—At the last sale 1 *s.* 10  $\frac{1}{2}$  *d.* You asked me if I could state what the bohea was composed of. I will refer the Committee to a question which was put to Mr. Reeves, who was the Company's inspector.

2561. *Chairman.*] What is the book to which you are about to refer?—The Report on Tea Duties, 1834. This is the evidence of Mr. John Reeves, who was the East India Company's inspector of teas at Canton. He was asked this question: "Will you state, as concisely as you can, the history of the manufacture of Canton bohea? Canton bohea is made from congou tea that has remained at the end of the season in the market, not having been bought, but remaining in the hands of the manufacturers at the end of the season, and of the tea grown in the province of Canton called woping tea.—You mean to say that it is an admixture of old tea of the former season and the woping tea? It is.—Where is that admixture made? In Canton. The woping tea comes down to Canton chiefly in tubs.—Have you ever known the woping tea purchased by the East India Company in its separate and distinct state for exportation to England? Never.—Is its quality generally so inferior as not to be fit for use without an admixture of better tea? Certainly, I should say so, for the English market."

2562. Mr. *Moffatt.*] Will you define to the Committee what is the difference between woping and bohea; with 20 years' experience, do not you know that woping and bohea mean the same thing, and not two descriptions of tea?—Bohea was partly composed, according to every report that was made, of woping. Woping entered into the composition of bohea.

2563. But woping tea was never imported into this country under the East India Company without a mixture of congou?—No.

2564. What was it called when it was so mixed?—It was called Canton bohea.

2565. You do not know of any distinction that there is between woping and bohea; according to your evidence they mean the same thing now?—The woping tea is tea grown at Wo-Ping, a district in the province of Canton.

2566. According to the paper which you have laid before the Committee, it appears that bohea was imported in the East India Company's time, and sold at 1 *s.* 6 *d.* to 2 *s.* a pound, and it is now imported under other names, and fetches from 5 *d.* to 6 *d.* a pound?—Yes.

2567. From that do you deduce that there is any fraud in the importation of this tea under the names of bohea, Canton, twankay, and young hyson?—It is an immense injury to the poor in this way, that at the time the tea was imported by the Company, there was an *ad valorem* duty of 96 per cent. on bohea tea, and instead of remaining as an *ad valorem* duty, or a rated duty of 1 *s.* 6 *d.* on bohea and 2 *s.* 2 *d.* on congou, the trade petitioned to have one equal duty put upon all kinds of tea. I am now speaking of the wholesale trade. It was represented to them that it would be an injustice to make the poor man pay as much for his bohea as the rich man paid for his fine hyson; that was met by the trade stating that bohea tea was very common, and so worthless compared to the better kinds, that an equalisation of duty would amount to a prohibitory duty, and there would be no bohea imported. At the present time bohea is worth 6 *d.* a pound in the market, and twankay 8 *d.*; if there were an *ad valorem* duty now, the buyer could have it now at 1 *s.* or 1 *s.* 4 *d.* a pound.

2568. Mr. *Villiers.*] What you call "worthless stuff"?—Yes; if there was an *ad valorem* duty there would not be so much injustice in the matter; but the injustice to the poor man consists in his having to pay 1 *s.* 9 *d.* per pound duty on what is intrinsically of so little value, and if it was imported under its own name there would be very little of it sold.

2569. You are going into the policy of levying a duty upon the article of tea; the Committee wish you to state what you know of the fraud practised by the trade, by selling inferior tea for higher priced tea?—My object in calling the attention of the Committee to this subject, is that the coloured tea should

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be prevented from being imported at all. If Canton bohea was not allowed to be imported as gunpowder and young hyson, and it could not be sold under its own name, it would not be imported. It would not be sold if it was not permitted to be imported as green tea.

2570. Do you want to prohibit its coming into the country at all?—While the present rate of duty exists. I will show the Committee some samples of tea which are now being offered for sale, of which some is lie tea (*producing the same*).

2571. Do you mean to say that lie tea is now imported into this country?—It is still sold wholesale and retail.

2572. Can you prove that?—Yes.

2573. Have you a sample of lie tea with you?—Yes (*producing the same*).

2574. Is the lie tea, of which you are going to speak, the same lie tea that has been spoken of in this Committee before?—Yes; that sample was offered at Moffatt's sale, 1855.

2575. Mr. Moffatt.] When was it imported?—I do not know; I could get the information if it was requisite.

2576. Are you not aware that it frequently occurs, when teas are unsaleable, they are offered for auction when they have been in the country four or five years?—Those are teas that can be got at any time; they have never left off being sold.

2577. Chairman.] Will you state to the Committee what you mean by lie tea?—There are two kinds of lie tea imported; one is composed of from 20 to 40 per cent. of sand, mixed up with the refuse of the tea-dust; it is worked into a mass, with a kind of starch or gum made from rice, and when it is granulated it is painted to resemble green tea.

2578. Can you say, of your own knowledge, that that description of tea is imported at the present time?—Not simply as lie tea; there was always a very little of that imported, compared to the sample I have placed before the Committee, which is composed of part lie tea and a portion of true tea.

2579. Are the Committee to understand that the lie tea chiefly composed of sand is not imported?—It is mixed with other tea; it is not sold to such a large extent as it was formerly.

2580. What is the second description of lie tea?—The second description is that in which there is a portion of good tea mixed with the lie tea.

2581. A portion of good tea is mixed with the lie tea composed of sand?—Yes.

2582. Mr. Otway.] Were the samples which you have produced procured recently?—Some were offered for sale to me within the last three weeks.

2583. Mr. Wise.] You were asked what you mean by lie tea; you mean what the Chinese mean, that is, false tea?—Yes, sham tea.

2584. Mr. Moffatt.] Is lie tea imported in any considerable quantity now?—No; and it will not be imported while this Committee sits; the exposures which have taken place have put a considerable check to it; if nothing is done by this Committee, in a couple of years we shall have as much imported as ever.

2585. Chairman.] Do you think any is imported at the present time?—Certainly; I have samples here.

2586. Mr. Moffatt.] What is the date of importation?—They were offered for sale on the 30th of October last year.

2587. Has any been offered for sale more recently?—I do not know, because I never look out for it.

2588. Do you know when that tea was imported?—I do not.

2589. It may have been imported when you made your statement in 1850?—I think not.

2590. Why not?—I do not believe it was.

2591. At what price can you buy lie tea?—Eight pence a pound.

2592. Less than that, cannot you?—I never bought it.

2593. Do you know any one that ever has bought it?—Yes; (*producing a sample of tea*), that is lie tea mixed with ordinary tea.

2594. Mr. Otway.] Where was this tea purchased?—It was offered at Moffatt's sale, October 1855.

2595. Wholesale?—Yes.

2596. Does

2596. Does it come in this way into the hands of the public?—It does; here is some which was bought from a retailer (*producing the same*).

2597. Chairman.] What was it sold for?—Fine pearl leaf gunpowder; it is sold wholesale as lie tea, spurious tea.

2598. It is not sold with any purpose of fraud to the retailer?—No, not by the wholesale men; the wholesale men are honourable to each other and to the trade; it is only when it is sold to the public that the public are the losers.

2599. Mr. Otway.] What is that spurious tea sold for at the wholesale price?—About 8 d. per pound.

2600. Mr. Moffatt.] Did it sell at the sale to which you have referred?—I do not know; I never buy lie tea; but as I wanted to show this Committee a sample, I inquired for it a few weeks since, and this sample was given to me, with the date when it was put up for sale.

2601. Having been in a public auction sale about six months since?—Yes; here is another sample offered for sale (*producing the same*); this also contains lie tea; it was offered for sale to me about a fortnight ago.

2602. When was that imported?—I do not know; they only gave the name of the ship, the "Malacca"; the price was 8 d.

2603. When was it imported?—I did not take the date of importation.

2604. Mr. Villiers.] I understand you to say that the wholesale houses have no scruple in selling lie tea?—No.

2605. It is generally recognised as an article to be used for the purpose of being passed off on the public as a superior tea?—It is always known that it will be sold to the consumer as a superior tea, and never for what it is.

2606. Is there a good market for this lie tea, do you know?—There used to be, until the "Lancet" drew public attention to the fact.

2607. When did the "Lancet" draw public attention to the fact?—About 1850 and 1851.

2608. Then was it discontinued for any time?—There was no very perceptible difference for one or two years, but gradually, as the people began to get better informed, it decreased. At one time you saw Canton teas, either painted boheas or lie tea, in almost every shop window. There were a great number of respectable shopkeepers who supplied the aristocracy, who never had any necessity to keep it; it was chiefly sold by those shopkeepers who supply the poor.

2609. What was it designated?—Fine pearl leaf gunpowder.

2610. Mr. Moffatt.] At what price was it sold?—Generally, 4 s. per pound; we found it all over the manufacturing districts; nobody would look at our genuine tea, they all preferred the painted and spurious tea; we found that Canton made tea was in general consumption all over the manufacturing districts.

2611. Mr. Villiers.] Do you mean that there was a preference for lie tea?—The people had been using the painted Canton and spurious green teas for some time, and had, to a certain extent, acquired a taste for it. They were also pleased with the colour. I must here state that my observations do not apply to lie tea exclusively, but to all spurious kinds, including painted bohea; they thought that the colour was natural to the tea.

2612. You were about to make some statement with regard to the sale of lie tea. You say that the publication of the "Lancet" stopped the sale of lie tea for a short time?—It has had a gradual effect; it has disappeared from the better informed districts; the districts in which persons reside who have access to the "Lancet" and other periodicals.

2613. Do you mean that lie tea has ceased to be sold?—Yes; at the present time, in consequence of the investigations of this Committee, you hardly see any green tea in any shop window in London.

2614. Is lie tea always green tea?—Sometimes it is black. There is a sample of scented caper (*producing the same*), which is also partly composed of lie tea.

2615. Mr. Otway.] Is this the tea of which you propose to prohibit the importation?—I propose to prohibit the importation of any painted tea.

2616. Is there a deleterious and unwholesome substance in its composition?—Yes.

2617. Mr. Wise.] Under what name or designation does this article called lie tea contribute to the revenue of the country?—It is sold as any other gunpowder tea or caper tea.

2618. Is it submitted to the Custom House as tea, although it is known to the

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the officers of the Customs as lie tea?—It would be known to the officers if they examined it; they do not have to inspect it; but if it was all dirt they would take the duty on it.

2619. Mr. Villiers.] I presume the officers of the Custom House have only to do with the duty to be collected, and not with the quality of the tea?—Yes.

2620. What do you know of the sale of lie tea at the present time?—The exposures in the "Lancet" have had a very beneficial effect. I must say that the "Times" and all the papers have done a great deal of good in making known these reports. It has gradually gone out of all the best neighbourhoods, but now you will just find it in the neighbourhoods where the poor reside, in the manufacturing districts, where persons never read the "Lancet," and do not read much at all.

2621. Mr. Villiers.] How is this spurious tea described in the shops in the poor districts?—"People's tea," and "tea for the million." Here is some of the tea for the million (*producing the same*); it does not contain lie tea, but it is composed of black tea painted.

2622. Is it not sold at very reduced prices?—It is at very reduced prices now to what it used to be.

2623. Mr. Otway.] I thought you said it was sold at 4 s. a pound?—That was in 1851.

2624. Chairman.] What is it sold at now?—At a variety of prices, from 2 s. 10 d., where they make it a leading article in London. In the country it is still sold at 4 s. or 5 s. a pound. I am here speaking of Canton green teas generally.

2625. Mr. Villiers.] Is there any other description of tea that could be sold as cheap as that at 2 s. 8 d. a pound?—This is a sample (*producing the same*) of good ordinary twankay tea; that is the material out of which the best kind of Canton gunpowder would be made.

2626. Chairman.] What is the price of that?—The same as lie tea, 8 d. per pound wholesale.

2627. Mr. Moffatt.] Has not lie tea a nasty taste?—Yes.

2628. Do not you think the public can judge for themselves between good tea and tea having a nasty taste?—No; they consumed millions of pounds, and did not find it out.

2629. In what year were a million of pounds of lie tea sold?—In 1851.

2630. What quantity has been consumed in the year 1854?—That I cannot tell. I am glad to say that less is sold than formerly.

2631. Do you believe half a million of pounds were consumed in 1854?—There is no data upon the subject.

2632. Is it not within your knowledge that the consumption of lie tea has decreased the last four or five years?—Certainly.

2633. Are you aware that there has been as much as 800,000 or 1,000,000 pounds of lie tea imported into this country in one year, and that there was not imported in the last year 200,000 lbs?—As long as the exposures last they will have the effect of preventing the sale to a large extent.

2634. Did not this decrease in the consumption of lie tea occur before there were any exposures by public inquiry?—Not at all; when we commenced trade we could hardly sell the true green tea.

2635. Who made those exposures?—"The Lancet."

2636. In what year?—In 1850 and 1851.

2637. Mr. Villiers.] Is there any means of discovering what quantity of lie tea is imported?—No.

2638. You cannot say whether one year there was 500,000 lbs. and the next year 200,000 lbs.?—It has never been distinguished; it has always been imported as green tea, or if it happened to be caper, as black tea.

2639. Mr. Moffatt.] Have you asked any brokers what quantity of lie tea is imported now?—I have made inquiries, but the brokers and dealers do not care to give any information on the subject.

2640. What did they tell you?—I have reason to know that there has been very much less of it, both imported and sold, since the exposures, than before.

2641. Viscount Ebrington.] Are there no means of ascertaining officially the amount of lie tea imported?—Not officially, because the Government have never kept any distinction between the two.

2642. If the Government were desirous of ascertaining the fact, would there be

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be any great difficulty on the part of competent and experienced Custom-house officers, in distinguishing between lie tea and genuine tea?—None whatever. This is a sample of green tea without any paint whatever (*producing the same*), from Kumaon, in the Himalayas, 900 miles north-west of Calcutta. What I wish to recommend to the Committee is that no painted tea of any kind should be allowed to be imported. If a regulation of that kind was made, it would prevent the inferior kinds of tea being imported under superior titles, thus defrauding the public, and putting the honest retailer in a false position.

2643. Mr. Villiers.] Did you state that there is no such thing as tea naturally of a green colour?—This is natural green which I last produced.

2644. Your objection is, that any tea should be brought in of a particular colour, because you call that painted, do not you?—I would object to any painted tea coming of any kind, either painted black or green.

2645. Mr. Moffatt.] What do you mean by the designation of painted tea?—It is first coloured with turmeric and Prussian blue, and then faced with a substance similar to French chalk.

2646. Viscount Ebrington.] In short, you would prohibit the importation of tea which has been artificially coloured?—Yes.

2647. Mr. Villiers.] How can a Custom-house officer know what has been artificially coloured?—There would be no difficulty about it; any Custom-house officer would know it.

2648. Teas are of various colours, are not they?—Green teas are not naturally of different colours; artificially they are.

2649. Is all tea the same colour in China?—There is unpainted black, and unpainted green.

2650. Chairman.] Is black tea and green tea the same colour?—No.

2651. Mr. Moffatt.] You are giving the result of considerable experience of the growth of tea in China; will you tell the Committee the distinction between black tea and green tea?—I cannot of my own knowledge tell you, but I can tell you from the best available source, which is Mr. Fortune's work on tea. Mr. Fortune has been all over the black and green tea district, and he states, that the plant from which the Canton tea is made is called the *Thea Bohea*; it is a very inferior description; all the fine green teas, and even the fine black teas, are made from one plant, that is the *Thea Viridis*.

2652. The fine qualities of black tea and green tea are from the same plant?—Yes.

2653. How does that square with your recommendation to the Committee with regard to tea being kept of its natural colour, when one tea comes black and another green?—The difference between true green and black would be only in manipulation. Mr. Fortune explains that the different colours in tea between black and green arises entirely from the different mode of preparation. There can be no objection to this; but what I object to is the addition of artificial colour.

2654. Mr. Wise.] Does not it arise from the different temperature in which the leaves are roasted?—Not at all; black or green tea might be made from either plant. Mr. Fortune shows the result of an experiment which he made, in Calcutta, with the Chinese tea-makers he was conducting to the Himalayas, in which they did not use teas at all, but ordinary leaves out of the garden; and they produced a good-looking green tea from ordinary leaves.

2655. Is not green tea, for instance, roasted once, and black tea two or three times?—Black tea undergoes a kind of fermentation, and is also fired or roasted more than green.

2656. Some tea may be prepared by a different heat, and by a different process?—Yes.

2657. Mr. Villiers.] Do you think anybody in this country could be sufficiently experienced to decide, in the first place, what had been done with the same plant in the way of manufacturing process, and also to distinguish between the different qualities of tea?—Certainly.

2658. So that if any tea were purchased at a retailer's, and it were referred to such a person, he could say whether that tea was what it purported to be, and what were the real qualities of the tea?—He could tell if it were painted in all cases.

2659. You say he could distinguish between the qualities of inferior and superior tea, supposing there were not any very great difference that ought to enter

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enter into the price?—Any judge of tea, that is, any broker or experienced dealer, could tell you the difference in quality between any teas you chose.

2660. Could a tea broker always tell the difference in quality, and affix the price upon the different qualities?—They do now, up to a farthing a pound; the samples graduate from a farthing a pound.

2661. There would be no difficulty in obtaining persons with that amount of experience that would enable them to distinguish between the different qualities of tea?—Not at all.

2662. Is the fraud chiefly practised selling inferior teas for teas of a higher price?—It is. The evil which I wish to prevent is the painted teas being allowed to come at all, because the inferior teas are palmed off on the poor man, and he has to pay the 1 s. 9 d. per pound duty on what is intrinsically of little value.

2663. Painting is the mode in which the fraud is practised with the most success, and one of your remedies for this fraud is, that you would prevent any painted tea coming into the country at all?—Yes.

2664. How would you prevent the process of painting after it had come in?—If painted tea was discovered in any shop it should be made a punishable offence.

2665. Would you allow teas to be sold of different colours?—Only natural black and natural green.

2666. Might they not paint some inferior black teas, what you would call natural green?—If they did so, I should make it a punishable offence, if it was discovered.

2667. Your plan is to prevent the importation of any artificially coloured teas?—Yes; it would not injure the wholesale trade at all; it would result in an immense increase in the consumption of tea if none of this spurious tea was allowed to be sold. I would allow time for existing contracts to be completed; say one year for Canton, and two years for Shanghai, after which no painted tea to be allowed to enter.

2668. Mr. Otway.] Is the lie tea made worse by the retailer?—No, he could not make it worse.

2669. Lord C. Hamilton.] You apprehend that there would be no difficulty in discovering the artificial colouring of tea, and in that case you would prohibit the importation of tea in a coloured state, and make it a punishable offence to colour it in this country?—Yes.

2670. Do you apprehend, with a reasonable degree of honesty and knowledge on the part of those employed by the Government, there would be any difficulty in the matter?—None whatever.

2671. Mr. Moffatt.] What proportion of the importations into this country consist of black tea and green tea at this time?—I could not answer that question from memory.

2672. Can you tell what proportion of green tea imported into the country at the present time is what you term painted tea, and what proportion is unpainted?—It unfortunately happens that all the true green tea that is made in the true green tea district is painted.

2673. Is there any green tea imported into this country that is not what you term painted?—Only what comes from the Himalayas, Java, and Assam.

2674. Is there anything prejudicial to health in what you term the painting of green tea?—It is not necessary in any case. It only degrades us in the eyes of the Chinese; it is only employed to cheat the consumer; and I consider the Canton green teas are painted so highly as to be injurious to the public health.

2675. Mr. Villiers.] I thought you said it was imported painted?—Yes.

2676. The Chinese paint it?—It is done to order. The Chinese are the most accommodating people in the world. All this evil is done with the knowledge or by the order of the British merchant. A little while ago Assam teas, which are very superior teas, were selling at an enormous price, and in a very short time we found that there were Chinese teas coming over with the appearance of Assam teas; they were called Tysam. Those teas were made at Canton, and they got them artificially flavoured, somewhat to resemble the Assam teas.

2677. Flavoured with paint?—No, not flavoured with paint. They have a kind of malty flavour, which is natural to Assam tea; but the order must have gone

gone out from this country to match the Assam teas; it could not have taken place in China without an order from this country.

2678. Mr. Moffatt.] When were you last in China?—I never was there.

2679. Have you a correspondent there?—No.

2680. How do you chance to know that the Tysam tea is manufactured in Canton?—It has always been sold in the market as such; it has been always sold to retailers as China Assam.

2681. You have stated to the Committee that this is not tea grown in the tea district of China, but that this Tysam tea is manufactured in Canton; can you tell the Committee how you come by that knowledge?—I know that it is imported from Canton. The chests that have arrived with it have Canton marked upon them.

2682. Are you not aware that some of the very finest congou is imported from Canton?—Yes.

2683. And the finest souchong?—Yes.

2684. Do you believe that those teas are manufactured in Canton?—No, certainly not.

2685. What makes you think that Tysam congou is manufactured at Canton?—Because it was reputed in the trade; the teas were offered as being China Assams, or at least, China teas made to imitate Assam tea imported from Canton.

2686. Mr. Villiers.] They are sold in the market as an article called China Assams?—Yes.

2687. Mr. Moffatt.] Imported from Canton?—Yes.

2688. Does it therefore follow that they are made in Canton, and are not grown up the country, and manufactured up the country, as other fine teas are?—It is immaterial whether they are or not; it shows that the Chinese will do anything to order.

2689. Your previous evidence was that the Tysam tea was manufactured at Canton?—It is immaterial altogether.

2690. Mr. Otway.] As regards these teas, although the retailer does not make them more deleterious than they are at present, I understand you to say that he commits a fraud, inasmuch as he sells them under different names and at a very different price from that at which he buys them, and, beyond all question, at more than a fair profit, because he buys them at 8 d., and sells them at 2 s. 10 d.?—Yes; that includes the 1 s. 9 d. duty.

2691. Mr. Moffatt.] The duty paid tea costs the retailer 2 s. 5 d., and he sells it at 2 s. 10 d.?—Yes.

2692. Do you think that that is a very exorbitant profit for a retailer selling quantities of half ounces and quarter of ounces?—No; but it is not the tea it is sold for; and if the consumer knew it was bohea he would not buy it. I conceive the poor man is very much injured; the real value of the tea is only about 6 d.; it has less of the active principle of tea; less of thein.

2693. Then the person guilty of the fraud is the Chancellor of the Exchequer, who gets the greater share of the spoil out of the poor man's pocket in the shape of the 1 s. 9 d. duty?—No, certainly not; the present equal duties were not imposed at the request of the Government, but at the request of the tea trade.

2694. Mr. Villiers.] I think you have only stated one remedy for stopping the series of frauds which seem to be practised in the trade; you propose to stop the importation of all coloured tea, and of course the right of mixing with any other substance whatever?—Yes.

2695. That would stop adulterated tea being imported and its being mixed with inferior tea?—Yes.

2696. Without going into that question, you have suggested that by a different mode of levying the duty, the quality could be ascertained at the Custom-house?—I think the present mode of levying the duty would do, if coloured tea was prevented from being imported at all.

2697. I understand you to say, that there are two sources of fraud, one colouring the tea, and the other mixing the tea before it comes into the country; you might prevent painted tea being imported at all, but I understood you to say, that there was a mode of preventing mixed teas being brought, by levying the duty according to the quality?—No, I would still levy one duty; the very fact of preventing the importation of painted tea would prevent the lie tea

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from coming, for if it was not painted it would not be sold, the fraud would be so transparent.

2698. Have you any remedy to suggest to prevent the mixing of tea in this country, there being teas of different qualities imported?—That would not be desirable.

2699. You are in the interest of the poor man, are you not?—Yes.

2700. You have stated that very inferior teas are sold at a high price in the poorer districts?—Yes; it nearly all takes place with green tea and not with black tea; most of the black teas have very distinct qualities; perhaps some of them are very deficient in strength, but have a superabundance of flavour; others plenty of strength, but little flavour; and it would be very much better to allow such teas to be mixed together.

2701. We are upon the subject of fraud; are there not different qualities of black tea?—Yes.

2702. Is it not a fraud to sell an inferior black tea at the price of a superior black tea?—I do not see how it can be prevented.

2703. You say that there are people sufficiently experienced in this country to detect that fraud?—Not the mixture of black teas, but the spurious green teas.

2704. You say that no broker could detect whether there was a mixture of inferior black tea with the superior?—A broker could detect it; it would not be desirable to prevent their being mixed.

2705. Is it possible to detect the different qualities when they are so mixed?—If they were of very different qualities; if two congous were mixed together you could not tell; if congou and bohea were mixed you could find it out; or if congou and souchong were mixed you could detect it; if there was a mixture of Kaisow congou with Hohow or Moning congou you could not tell them.

2706. You are anxious to prevent a low priced article being sold at a higher price than it ought to be?—Yes.

2707. You have no remedy to suggest with regard to black tea?—No.

2708. Your only remedy with respect to painted tea is by checking its importation?—Yes.

2709. If it was proved that any painting took place in this country, would you make that a punishable offence?—Yes.

2710. Have you any evidence to show what injury is done to health by selling these painted teas?—It is not so much an injury to health as it is a fraud upon the consumer.

2711. Is this painting deleterious; is it poisonous?—I think so.

2712. Have you any evidence as to the injury it produces upon the health of the poorer classes, by whom you say it is most generally consumed?—I could not tell the kind of disease which it produces, but the material is proved to be prussiate of iron; in the Canton teas it is used to a large extent.

2713. You have made inquiries into the subject, but you are not particularly informed about the medical effects?—Not of the nature of the disease it would produce.

2714. Mr. Otway.] You have no medical knowledge, have you?—No; many medical men have told me that it would be very desirable to prevent such stuff being sold.

2715. Mr. Wise.] Do you mean to say that there are no frauds practised in this country with respect to tea?—To a very small extent; the Excise look after all that sort of thing, and if a man was guilty of making sloe leaves into tea he would be very likely to be punished; it is a punishable offence.

2716. Do not you believe that tea leaves are dried and coloured in this country, and sold as tea?—Evidence given before the Excise in 1851 proved that the practice existed, but I think there is very little of it going on at the present time.

2717. Have you heard of any filings being found in tea to increase its weight?—I saw some old samples ten years ago in which some feruginous matter existed; the magnet attracted it, but I never met with it myself.

2718. What remedy would you suggest, independently of that at the Custom House, for the protection of the public with reference to tea, and other articles?—That is the only remedy which I can suggest at the present time for tea, and I think it would be effectual. For other articles a staff of qualified inspectors would be advisable.

2719. Mr.

2719. Mr. Moffatt.] Will you explain to the Committee what you call "prussiate" of iron is?—It is Prussian blue.

2720. Prussian blue you state of your own knowledge, or on credible authority, is very injurious to the public health?—Medical gentlemen have told me so.

2721. Taken in the quantity in which it would be used to make tea a brighter green?—Taking the quantity which is used in Canton, it is injurious.

2722. Can you state what medical authority informed you that "prussiate" of iron, as you term it, was found in tea?—You can find it in the "Lancet."

2723. Can you state the medical authority who informed you of the existence of what you term "prussiate" of iron in tea?—I have read Mr. Warrington's analysis of the colouring material brought home by Mr. Fortune; Mr. Fortune brought samples of the colour he saw used in the manufacture of green tea, and he gives Mr. Warrington's analysis of it in his book.

2724. Mr. Villiers.] You do not know that tea is painted extensively in this country?—I believe it is not painted in this country; it is already sufficiently done in China.

2725. Have you ever detected tea being painted in this country?—Never.

2726. Mr. Moffatt.] You have given evidence that green tea is coloured?—Yes.

2727. And you state that owing to that colouring it is prejudicial to the public health?—True green tea is not coloured to hide the material, and therefore there is not a sufficient quantity of colouring matter to injure the public health; but you cannot prohibit the Canton green, which is painted so extensively on purpose to hide the material of which it is composed, without prohibiting the true tea from being painted.

2728. Will the prohibition of painted tea put a stop to the importation of this spurious tea and carry out the wishes of the trade?—I think it would.

2729. I thought you stated that there was lie tea imported under the name of scented caper?—That is also painted; it is not painted green, it is coated with black lead.

2730. What remedy would you propose with regard to tea which is coated with black lead?—It all comes under the same denomination; it is all painted; and I would exclude any painted tea, black or green.

2731. Mr. Wise.] In fact, you wish the public to drink the tea which the Chinese drink themselves?—Yes; they think we are barbarians for using these painted teas.

2732. Mr. Villiers.] Do the brokers know that lie tea is imported?—Yes; the lists show that they sell it as spurious tea. In the list of the 7th of March, you see spurious tea quoted, that would be lie tea as well as painted bohea.

2733. Where do these sales by auction take place to which you refer?—Mincing-lane.

2734. Every month?—At different times; not at any stated times; but a great deal is sold by private contract.

2735. By the wholesale houses?—Yes.

2736. In that case you do not know how much lie tea is sold?—That is partly one reason why it cannot be ascertained.

2737. It is not entered as lie tea, is it?—No; it is always entered as gunpowder tea or scented caper.

2738. Mr. Moffatt.] Have you any information to enable you to state to the Committee that there has been within the last 12 months 100,000 lbs. of lie tea sold?—There is no data to show it.

2739. Do you believe it?—I could not state it.

2740. Have you ever ascertained from any well informed broker the quantity imported within the last 12 months?—I have frequently asked the question, and have been told that there is very much less coming than there was before the exposures.

2741. Mr. Villiers.] Would the brokers be likely to tell you?—The brokers do not like to give any information in this matter; they leave it to the trade to buy lie tea if they like; it is not their affair.

2742. Mr. Alderman Cubitt.] You have produced some samples of lie tea. I think you said that you inquired for lie tea?—For the purposes of this Committee. I was summoned here three weeks ago.

2743. Mr. Moffatt.] The samples of lie tea which you have produced appear

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to have been offered to the public about six months ago; the inference from your statement is, that that was the most recent sample of lie tea which you have been able to find?—This is also a sample of lie tea brought to me by a customer; he stated that he wanted me to examine it.

2744. Can you state whether the consumption of lie tea has increased or decreased?—I have already stated that the consumption has decreased.

2745. Are you aware, of your own knowledge, of a single pound of lie tea being imported during the present year?—I cannot state it.

2746. Have you asked any broker, or those who should know, whether there is any lie tea imported now?—I believe there is very little, and there will be very little as long as there is any exposure.

2747. With regard to painted tea, you deal in tea, do you not?—Yes

2748. Do you sell green tea?—Yes.

2749. Are you so fortunate as to get tea like the sample from Kumaon, or do you deal in painted teas also?—There are no genuine unpainted teas that come from China; we buy those that have the least possible amount of paint; we cannot get them without paint; and it is because we cannot get them that I want the Committee to prevent the importation of any painted teas.

2750. Mr. Olway.] You cannot purchase green tea that is not painted, can you?—No, except in small quantities, which come from the Himalayas, and some other places; there is no continuous supply.

2751. Mr. Moffatt.] You were understood, at the commencement of your evidence, to say that the public would not take good tea before your firm appeared in the tea trade; that they disliked the good tea; is that the fact?—You must not understand that I attribute the good that has been done in undeceiving the public to ourselves; we have done what we could, but I believe the improvement has taken place from the exposures in the "Lancet," and the press generally.

2752. In your opinion, prior to 1850 and 1851, the public hardly liked good tea, but by reason of the exposures in the "Lancet" the public have come to like good tea?—We found the public had been accustomed to tea of a vivid colour, and objected to the dingy colour of true tea.

2753. Chairman.] Will you state briefly to the Committee what you have to say upon the subject of coffee?—We consider that the mixture of chicory with coffee is an adulteration, and that it is prejudicial to the fair trader, the consumer, and the revenue.

2754. Do you mean that you object to the mixture of chicory and coffee if it be distinctly stated to the buyer that it is a mixture of chicory and coffee?—Yes, for this reason, the proportions are never stated; there may be one ounce of coffee and 15 ounces of chicory, or one ounce of chicory and 15 ounces of coffee. If you once open the door to mixture you can never prevent the mixture from going to an enormous extent.

2755. Do you believe it is mixed in such a proportion as one ounce of coffee and 15 ounces of chicory?—No; the usual proportions of shilling coffee is half chicory and half coffee.

2756. Is that injurious to the fair trader?—It is injurious to the fair trader, the revenue, and the consumer.

2757. It is injurious to the consumer as being a fraud upon his pocket?—Yes. A pound of native Ceylon coffee, which is the cheapest kind of coffee, when roasted, costs the grocer 1 s.; if he sells that at 1 s. 2 d., he gets 2 d. per pound profit, or 14½ per cent. The mixture usually sold at 1 s. per pound is half chicory and half coffee; the mixture costs the grocer 7 d., that is 6 d. for the half pound of coffee and 1 d. for the chicory; the grocer would therefore get 5 d. on every pound, or 41½ per cent., and that would enable him to sell 16 per cent. cheaper than the fair trader, and he would in reality realise 27½ per cent. more profit.

2758. Are you of opinion, if the grocer were to put outside the packet that it was half chicory and half coffee, the public would not buy it?—It would be better that each article should be sold by itself under its own name.

2759. Do you think the proportion of chicory is so great, that if the public knew it they would not purchase it?—I think they would not. One of the bad results arising from this permission to mix the two articles is, that it produces a lax morality in trade. The traders get such enormous profits on the mixture of chicory that they are enabled to sell other articles, such as sugar,

sugar, below their actual cost. We have had some experience in the matter. When we first commenced, the permission to mix chicory with coffee was in force. We always sold our sugar at a little above the cost price, and when we commenced we found we were always a halfpenny a pound more than the rest of the trade. When the permission to mix chicory with coffee was done away with, as it was for about two months, the trade having no longer this immense fund out of which to make up their losses, immediately left off selling sugar at a loss, and sold it at a profit.

2760. Mr. Peacocke.] What date are you referring to?—1851.

2761. Do not you think that the selling of sugar below its cost price might have been produced by other causes than the great profit realised by mixing chicory with coffee?—As we found that they stopped selling at a loss when the permission to mix chicory with coffee was done away with, we attributed the selling at a loss to that permission.

2762. Was not it about 1851 that this question was first agitated?—Yes.

2763. Previously to 1851, do not you think the sale of sugar below its cost price might have been caused by its being materially adulterated?—I think very little adulteration ever took place in sugar.

2764. You do not know to the contrary?—No.

2765. Chairman.] Do you sell sugar?—Yes.

2766. Mr. Peacocke.] You mean that the wholesale houses do not adulterate the sugar?—And the retailers also. There is very little adulteration in sugar.

2767. Mr. Moffatt.] You never heard of adulterated sugar being sold to the public?—I have heard of it, but never largely.

2768. What was it adulterated with?—Some kind of starch. The starch is soluble in hot water, and sugar is generally used with hot water, and hence it is not readily detected, as it leaves no sediment.

2769. What is the value of starch per pound?—It was sago flour; it used to cost somewhere about 19 s. or 20 s. a cwt.; it was never done to any very large extent. Sago and potatoe starch were sometimes treated with dilute sulphuric acid, and which gave it somewhat the properties of sugar, and used to adulterate sugar with.

2770. Chairman.] Do you believe that there are any other adulterations of coffee except the mixture with chicory?—No, I think not. The annual consumption of chicory has been ascertained to be about 12,000 tons, and the annual consumption of coffee is about 17,000 tons. We have had a little experience in selling the two articles; we have always sold our chicory very cheap. We have never recommended or discouraged the use of it; we always sold it separately, letting the consumer buy if he chose, and we found that the public buy of us 1 lb. of chicory where they buy 9 lbs. of coffee; so that we conclude if the public were left to buy the two articles separately in the quantities they required, they would only consume in the course of the year about 2,000 tons of chicory.

2771. Mr. Moffatt.] How have you ascertained that the consumption of chicory is annually 12,000 tons?—It is stated in the Report of the proceedings on the part of the coffee interest in 1853.

2772. Mr. Villiers.] Do you import chicory to a certain amount?—It is all imported. At the present time there is none grown in this country, at least very little. This statement was given in evidence before Lord Derby (*handing in the same*).

2773. Was this evidence got up by the coffee growers in Ceylon?—It was. They stated that they took the means to ascertain at all the railway stations, and other places, the actual quantity that was brought from the places of growth, and they gave sufficient evidence before the Government of the day to convince them that there were 12,000 tons of chicory consumed.

2774. How can you ascertain the quantity of coffee consumed?—The quantity imported and the quantity consumed is kept distinct. The quantity that pays duty is considered to be the quantity consumed.

2775. I suppose an immense quantity of what is sold for coffee is more chicory than coffee?—Yes; our experience is that the public buy one pound  
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of chicory and nine pounds of coffee; therefore, if the public were left to themselves they would only buy 2,000 tons of chicory, as chicory, in the course of the year, whereas now 12,000 tons are consumed; therefore we conclude that 10,000 tons are forced on the public against their knowledge.

2776. You have told the Committee that 12,000 tons of chicory are annually consumed, and you have discovered, by another calculation, that the consumption is only one ton of chicory to nine tons of coffee?—Our experience is, that only one pound of chicory is bought as chicory, for nine pounds of coffee, so that the public buy a tenth of chicory.

2777. Mr. Moffatt.] Will you inform the Committee how you arrive at the conclusion that there are 12,000 tons of chicory used annually?—From the report in this book.

2778. You have placed in the hands of the Committee a book which appears to be an anonymous pamphlet?—It is got up by the coffee interest.

2779. It bears no name?—You will find the names of gentlemen, Baring Brothers, and a number of others in it.

2780. Mr. Villiers.] Did you say that the Government did not dispute the accuracy of the statement?—Yes; there are some of the highest names in the mercantile world appended to it.

2781. Mr. Moffatt.] It appears by the fifth page of this pamphlet that certain merchants met and entered into a subscription to inquire into the extent of the use of chicory in coffee, but I do not find in this pamphlet that they guarantee or sanction this statement of 12,000 tons of chicory being used annually?—They state there that they ascertained it in such a satisfactory manner as to convince Lord Derby.

2782. Mr. Villiers.] They do not state the amount of chicory sold as coffee, but only the amount of chicory consumed in this country?—Yes.

2783. Is not chicory used for other purposes?—For no other purposes than the adulteration of coffee.

2784. Mr. Otway.] Do you attribute importance to that statement in consequence of the names that are attached to it?—Yes; I have no doubt that the names are a guarantee that the statements are correct.

2785. Will you read the names?—Baring Brothers; Gregson & Co.; Frith, Sands & Co.; Ceylon Plantation Company, per R. B. Tennent; W. Tindall, Esq.; Small & Co.; Matheson & Co.; Crawford, Colvin & Co.; S. Rucker & Sons; Somes, Mullens & Co.; T. H. Young, Esq.; Scott, Bell & Co.; C. W. & F. Shand; T. & H. Littledale; Waterhouse & Sons; Shand & Co.; Phipps & Co.; Forbes, Forbes & Co.; Price & Bousted.

2786. Do those gentlemen guarantee the statement contained in that pamphlet?—They do not guarantee it; but I have no doubt that no false statement would be permitted to go out to which their names were attached.

2787. Mr. Kinnaird.] Have you read the pamphlet?—Yes.

2788. As far as you can judge, it bears upon it evidence that those gentlemen sanctioned that statement?—Certainly.

2789. Mr. Moffatt.] At what time was this pamphlet published?—1853.

2790. Are you not aware that the names which you have read refer to a meeting which took place in 1851, at which those merchants were present, in reference to the consumption of chicory and coffee?—The expense of all those proceedings was defrayed by those gentlemen, and the book was printed with their funds; the book states so in its body, and I of course conclude that they sanctioned the statements contained in it.

2791. Mr. Otway.] Is that book published under the authority of those gentlemen whose names you have now read?—It was published with the funds contributed by them.

2792. Under their authority?—The pamphlet does not positively state that; it is got up entirely for circulation amongst them.

2793. By funds contributed by those gentlemen whose names you have read?—Yes.

2794. Those gentlemen must approve of the statement if they circulated it with their funds?—Yes.

2795. Mr. Moffatt.] Will you show the Committee whereabouts in that pamphlet it is so stated?—"In July 1851, at a meeting of merchants and others interested

interested in Ceylon, it was unanimously resolved to raise a fund for the purpose of preventing the adulteration of coffee, to which the following firms subscribed." Then follow the names which I have read. "From this fund the expenditure to the close of December 1851 was liquidated, and no contributions were called for from the other firms interested in the struggle."

2796. Will you read the passage in this pamphlet which shows that those gentlemen sanction the statement which you have just made?—I do not think the book contains a statement from the gentlemen that they sanctioned it, but it was all done with their funds.

2797. Chairman.] Have you any means of showing that that pamphlet was published with the authority or under the direction of those firms whose names have been read?—It was printed for circulation amongst the coffee interest; it was not got up for circulation amongst the public; it is appealing only to themselves. The pamphlet is addressed to those gentlemen, and to the trade interested in the importation of coffee.

2798. Can you inform the Committee who wrote that statement?—I really could not. I dare say Mr. Moffatt could inform you better than I can.

2799. You are not able to state that that pamphlet has been supervised by those gentlemen whose names have been read, and that it comes out with their authority attached to all the statements in it?—I could not say that those gentlemen vouched for everything in the book.

2800. Mr. Moffatt.] Are you not aware that in the interval between 1851 and 1853 many of the gentlemen whose names you have read took no further interest in the question of the mixture of chicory with coffee?—One gentleman, who took a very honourable part in that transaction, and endeavoured to prevent the mixture of chicory with coffee, but the retail trade acted in a very unfair manner to him; they entered into a combination not to deal with him, and in consequence of that opposition on the part of the retailers he has withdrawn.

2801. Chairman.] All you meant to state when you gave the amount of the annual consumption of chicory from the statements in that pamphlet was, that you individually believed that that was the annual amount?—Yes, because they state that they made the same representations to Lord Derby, and they were sufficient to convince him.

2802. Mr. Wise.] You have stated in your evidence that chicory is very largely used in this country; how is that chicory prepared, and by whom?—The chicory which is now used is mostly grown in Holland and Belgium. It is sent over here in the root, and is sold in the root; the grocers send it to the roasters, who roast it, and then it is brought home roasted to the grocers, and they grind it.

2803. Do the grocers always grind it themselves?—In some cases they buy it readyground; in most cases they grind it themselves.

2804. Do not persons who carry on the specific trade of drug grinders carry on the trade of chicory grinders also?—In many cases the grocer sends the raw chicory to the coffee roasters and it comes home to him ready ground.

2805. Have you ever heard that parsnips and carrots are treated in the same way as chicory, and dried and ground for the purpose of adulterating coffee?—That used to take place some time ago.

2806. You have stated that chicory is very little grown in this country; is it not grown largely in Yorkshire, Bedfordshire, and Surrey?—It used to be at one time; but since the high price of corn the farmers found they could turn their land to better account. I believe there is very little chicory grown in this country; nearly all that is being offered for sale is foreign grown.

2807. Are you of opinion that the chicory which is now sold is rarely contaminated or mixed with any other article?—Chicory can be grown as cheaply as any other substance; as cheaply as parsnips; and there is no inducement to practice any fraud of that kind. I should wish to recommend the prohibition of the mixture of chicory with coffee, in justice to the fair trader; he cannot compete with other grocers who use the mixture; it gives the mixer such an advantage over the fair trader that it is impossible to conduct trade fairly while this mixture is permitted.

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Mr. William Atkinson, called in ; and Examined.

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2808. *Chairman.*] YOU are a Wholesale Druggist, I believe?—A Manufacturing Chemist of medicinal articles.

2809. You are anxious to give evidence in order to show that adulteration does not exist in your trade to the extent which has been previously stated to this Committee?—Yes.

2810. Will you have the goodness to state to the Committee what is your reason for that opinion?—I beg to inform the Committee, with regard to my experience, that I commenced business in 1819: At that period the business I undertook was medicinal chemistry, and with it there was united a large establishment for drug-grinding that had been put up in connexion with the supply of the army during the late war. When the supply for the army ceased, those mills were more open to the public generally to send their drugs to be ground. At the period of my commencing, I found that there were great improvements required in the system of managing and preparing the medicines by grinding, and those improvements had been commenced by one wholesale drug house. With regard to the manner or the custom of managing, I found there was a system prevailing through the wholesale drug trade of requiring what was called the four per cent. The drugs sent to be ground were required to be returned with the loss of only four per cent. The working of that system was this. Take the case of opium. Supposing opium were sent to the mill, and it were required to be returned with only a loss of four per cent., as opium loses a great deal more, it had to be made up with some innocuous matter; vegetable matter, or something like opium must be employed, not containing the opiate principle, but the other part of opium. The working was this: when the four per cent. was deducted, the strength of the opium would be the same as the opium of the market; it would be just the same strength as the lump opium brought from abroad; the powder would be of a uniform strength, deducting only the four per cent. That system of four per cent. was carried on throughout. When I began to confer with the druggists about the improvement, the first thing I told them was the necessity of abolishing that system. We talked about the improvements required in the preparation of medicines generally, and I told them that whatever they sent would be done in the most strict way, so that the quality returned would entirely depend upon themselves. I recommended the abolition of the four per cent. system. At that time, being an established custom, there was a little difference of opinion, and although they necessarily saw the improvements, they felt a little doubt as to the policy of making medicines stronger, because we know it is possible to give an over-dose as much as an under-dose, and an over-dose sometimes would be more injurious than an under-dose. Some did not like the idea of altering an established system, and difficulties arose; but, however, the necessity of improvement was evident to all. The improvement was applied first to one article, then to another article, by one house and another house, and as the improvement was seen to give satisfaction, and to be desirable, it was continued; so that by degrees the system was altered.

2811. Mr. *Peacocke.*] What does opium lose in grinding?—It varies, being a moist preparation.

2812. How much per cent.?—Sometimes 13 or 14 per cent.

2813. Were physicians in the habit of making up their prescriptions with reference to the four per cent. loss; with regard to the opium in its adulterated form?—They must have made their prescriptions up with reference to the established custom.

2814. That is to say, knowing it to be adulterated, they made up their prescriptions with reference to its adulterated form?—It must have been so.

2815. *Chairman.*] You state that you took steps to abolish this system?—Immediately

2816. Do you believe it to be abolished at the present time?—I was coming to that; I saw amongst my connexion in the City a gradual change from article to article, one house doing this and another house doing that; I saw a gradual abolition of the four per cent. system.

2817. Mr. *Wise.*] Do you mean by the four per cent. system, a loss of four per cent. only?—Only four per cent.

2818. Mr.

2818. If I understand you rightly, you say the druggists only submitted to a loss of four per cent. upon their articles?—Yes. Mr. W. Atkinson.

2819. Is there not considerable moisture in all vegetable substances?—It varies very much. 4 April 1856.

2820. Does not it vary as much as 10 to 15 per cent.?—Yes, in some articles.

2821. From the evaporation of the moisture during the operation of grinding?—There is not so much loss in grinding as in drying in the stove; all vegetable substances are aqueous and the evaporation takes places in the drying process in the stove; there is a much greater loss than four per cent. in grinding drugs of a vegetable character; though bark being very dry would not lose much more.

2822. Does not the loss approach nearer to 10 or 15 per cent. than to 4 per cent.?—I have a table here which I will show you. After this improved system had been working some years the Pharmaceutical Society was established under a charter, and the members of that society were very anxious to ascertain the nature of the existing system of preparing medicines by grinding, and they ordered an inquiry to be made by one of their professors, Professor Redwood, as to the existing state of the preparation of drugs, for there had always been an anxiety on the part of all medical men, and also the druggists, upon the subject: Professor Redwood proceeded to make an inquiry, and he came to me, amongst others, being the oldest in the trade, and having most experience and information as to the custom of the trade. I then gave him the information, and he also made inquiries of other houses. I explained to him the established custom of the four per cent. system, and also its gradual abolition. When he was making that inquiry he also made inquiries as to the average loss the drugs would bear. In the transactions of the society for the year 1848 an account of the existing custom was published, and also a table, which I will now refer to, of the losses of a certain number of drugs, to give an idea generally.

2823. *Chairman.*] What is it you are going to read?—This is an account of the average loss which some drugs actually bear.

2824. By whom was the information given?—It was furnished partly by us; I agreed to the evidence which Mr. Redwood had got generally; he asked me to look over this table, furnished by another house, and I concurred generally; there was a trifling difference; but my experience confirmed this table.

2825. Mr. *Wise.*] In fact, you are going to show, as I understand you, the difference between the loss of four per cent., which the chemists and druggists submitted to, and the actual loss which the grinders found it necessary for them to submit to?—Yes.

2826. Will you state some of the leading articles?—Here is bark; pale bark loses 6 lbs. 6 oz. per cent.

2827. Per cent. or per cwt?—Per cwt.

2828. What is the loss upon scammony?—Seven pounds four ounces.

2829. Ipecacuanha?—Five pounds three ounces.

2830. Rhubarb?—There are three kinds down here; Turkey, 5 lb. 12 oz.; China, which is commonly called East India, 6, and English, 7 lb. 13 oz.

2831. Sarsaparilla?—Jamaica sarsaparilla 10 lb. 1 oz. per cent.

2832. Jalap?—Eight pounds 12 oz.

2833. So that, if I understand you correctly, the custom of only losing four per cent. was an impossibility if the drugs were honestly ground?—They were required to be made up with some simple matter analogous to itself. Jalap contains a great quantity of woody matter besides the active principle; bark the same; the active principle is one thing, and the fibrous inert woody matter is another; nearly all drugs in a state of nature have inert woody matter, and they have the active principle, and the custom was, as a matter of course, to find some material as analogous as possible to the material to be acted upon; something quite inert; the thing generally used was lignum vitæ; it was the common custom to use it, it being a thing innocuous, without taste and without any scent, as analogous as possible to the material of jalap or bark.

2834. *Chairman.*] I think I understood you to say, that the chief cause of loss in the process of drug grinding was owing to the evaporation?—Yes.

2835. Therefore what is lost is water?—Yes.

2836. That loss of water you supply with the lignum vitæ, which you can hardly



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hardly call analogous to water?—I mean in the effect upon the stomach; not analogous to the natural element.

2837. Mr. Wise.] When the druggist required the drug grinder to make good the loss, was not it done in various ways?—No.

2838. There is a term which I have no doubt is familiar to you, "powder of post;" was that used by you?—No.

2839. Is not sawdust used largely for the purpose of cleaning out the mills?—Water and sawdust.

2840. So that a good deal of sawdust might be left in the mill?—No.

2841. Mr. Kinnaird.] A more scientific adulteration than sawdust is used?—Was used under the old system, as before described.

2842. Mr. Wise.] Was sarsaparilla ever ground with liquorice root, or any other substance?—No.

2843. Is not Jamaica sarsaparilla at this moment mixed with inferior varieties, such as Honduras?—No.

2844. Are not inferior varieties substituted for Jamaica sarsaparilla?—We only know as to the grinding; the substitution comes afterwards; the substitution is by the person who uses it.

2845. The article must be ground before it is substituted?—Of course; there is no substitution with us; the substitution is by the man who administers it. For instance, a thing is sent into us to be ground, and we grind it.

2846. You grind whatever you are required to grind; have you ground inferior articles?—Yes; when articles are sent in to be ground, it is not for us to ask what they are, excepting in cases of palpable adulteration, or who they are for; it is only for us to pledge ourselves that they are faithfully done.

2847. Chairman.] Will you state to the Committee the object with which substances such as lignum vitæ are mixed with the drugs that are ground?—Of course I could not answer that, because the system sprang up before I had any intercourse with the trade.

2848. Cannot you tell why the trade wished it to be done?—I only know it was an established custom.

2849. Mr. Peacocke.] Would not water have done as well?—No.

2850. Why not?—Because water would make the drug soft.

2851. Chairman.] Was not the object of the mixture to enable the person who sent the drug to be ground to receive back a larger quantity of that drug than he would have been able to do if the drug had been pure?—I think not; I do not see the object in it.

2852. What object had it, in your opinion?—I cannot see an object, and immediately I began to have experience, I recommended its abolition.

2853. Mr. Peacocke.] Is it not perfectly clear, that by this evaporation what the drug loses by being ground, it does not lose in strength, but rather gains in strength; by taking out this 13 or 14 per cent. of water, would it not strengthen the remaining portion of the drug?—The proportion of the active element would be larger.

2854. Mr. Wise.] You stated just now that you ground anything that was sent to you; have you ground damaged ipecacuanha, damaged rhubarb, and articles of that description, which are unprofitable in the pure state; are they ever sent to you for the purpose of grinding to make them more profitable?—I was coming to that. I have made an arrangement of the matters I wish to explain. I have explained the grinding, and there are some other points I wish first to lay before the Committee.

2855. Mr. Peacocke.] You say that a drug gains in strength by having 13 or 14 per cent. of water taken out by evaporation; therefore you might adulterate it to a certain extent, and yet really restore it to its original strength?—That was the operation of the system.

2856. It does not at all follow because you withdraw 13 or 14 per cent. of water that therefore it gains 13 or 14 per cent. of strength?—The element must remain the same; you take away some of the inert matter which is in the commodity in its native state; the element or active principle remaining the same, the abstraction of 13 per cent. of inert matter would give you increased strength; the proportion must remain. I wish to show to the Committee that that system is entirely abolished, so that when the inquiry by the Pharmaceutical Society was instituted, the evidence given to their inquirer was the same as I have given to the Committee to-day.

2857. Chairman.]

2857. Chairman.] Are the Committee to understand you to state that, as far as you know, the practice of mixing what you describe as inert matter with drugs after they are ground has entirely ceased?—Entirely ceased. I should very much like just to comment upon the evidence of one gentleman; it is only for the sake of giving an illustration, which I am sure he would not object to; it is the evidence of a most respectable man. I refer to Mr. Warrington, who stands in a very responsible position. Mr. Warrington, in his evidence, was asked this question: "You say that you generally grind your own drugs; from inquiries which you have made in the trade, is it your opinion that a great deal of adulteration takes place on the part of the grinder?" Mr. Warrington's answer is, "We were forced to grind our drugs by the fact of that adulteration. Even when the Society of Apothecaries sent a man to the drug mill to superintend the grinding of their own drugs, he was taken down to dinner or to lunch, or something of the kind, and all kinds of tricks were played with the drugs." Now the Committee will see that that is really most serious. I do not say that it is a direct allegation, but it is an implication of a most serious character. Of course we all felt it to be so, and the public reading the reports which are published in the newspapers, must have their confidence shaken; it will be a most serious thing in families where this statement is read. I wish to call the attention of the Committee to this fact: Mr. Warrington stands before the world as a very responsible man, holding a high position in the Apothecaries' Company, and the Apothecaries' Company carry on their business well and correctly in every way. You will see by putting the question and answer together, that the period is not fixed by Mr. Warrington himself when this applies to. The time when this applies to, and the only time it could apply to, was before the Apothecaries' Company erected their mills, because they say we did it because we could not get it done; therefore it brings the mind of the Committee to the period when Mr. Warrington derives very bad evidence on which to ground the necessity of putting up their mills. I beg to assure the Committee, although I have not the fact before me, I have it very nearly. I have a little work which gives the origin of the various establishments of the Apothecaries' Company, published by themselves in 1823. No reference is made in this work to the precise period when mills were put up, but if the Committee should think it worth their while to ask Mr. Warrington to give the date of the erection of the mills, it would bring before the Committee the time when that horrible state of things existed that they were obliged, from the dishonesty of the drug-grinders, to resort to that proceeding.

2858. Chairman.] Will you have the goodness to read the passage from that book, which shows that the mills were established at that date?—They are alluding here, generally, to their different modes of carrying on business, and their having no articles of inferior quality in their possession, "and as far as is practicable conducting all the process within their own walls, particularly that of powdering drugs at their own mills, by which a fruitful source of fraud must be prevented." This bears date 1823, and if the Committee would get from Mr. Warrington the fact of the date, it will be proved to you, I am quite satisfied, that the fact Mr. Warrington alludes to occurred long before he had any connexion with the Apothecaries' Company, and I think it will be proved to be before he was born. I feel very certain that it was more than half a century ago, and he had that evidence handed down to him by tradition only.

2859. Mr. Peacocke.] When you say that this adulteration is at an end, you speak only of your own establishment, I presume?—Of course I only speak positively of my own establishment.

2860. You cannot say that it is at an end in other establishments?—No.

2861. Have you ever inspected any other establishments?—No. I have my belief arising from experience, just the same as Mr. Warrington; he might give a great deal of evidence as a matter of opinion and not of fact. I am speaking of fact myself; but I have my impressions upon the subject as others have.

2862. Mr. Wise.] You do not deny that toll has been taken by drug grinders or that adulterations have taken place by mixing different things?—I have heard, as others have heard, some remarkable stories handed down. Parliament, by its Committees, has had evidence brought before it of a most extraordinary character, several times.

2863. Perhaps you think the drug grinders would not object to pay a licence

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and be subject to frequent inspection?—I should think not. I should not object if a party wanted to send a man to see his drugs ground, except I might say, "I would rather be trusted." I would rather you should be convinced that there is nothing objectionable going on.

2864. *Chairman.*] At what time was it that this practice, to the best of your belief, ceased?—I can only speak of my own experience. I began in 1819, and I have never done it.

2865. You have stated to the Committee that at the period when you began business the practice was a general practice?—That is a different thing from what Mr. Warrington alluded to.

2866. That practice, you say, existed generally when you first entered business?—Yes.

2867. When, to the best of your belief, did it cease?—It went on gradually. One house would adopt this, and another house would adopt that; year after year it went on, being applied to article after article. You must understand that we have very numerous articles in drug grinding, it is not like one article; they vary in importance.

2868. Mr. Peacocke.] Cannot you tell the Committee the year from which you date the decline of the adulteration?—1819.

2869. *Chairman.*] From the year you entered into business?—Yes. The next thing I wish to explain to the Committee is with regard to compound horse powders. It has been stated before the Committee that in preparing compound powders for horse medicines it has been the prevailing custom for the person carrying on the administration of horse and cattle medicines to require certain powders, about 12 in number, to be prepared for them in a reduced state; they are more likely articles flavoured, as I understand—I am not at all conversant with horse doctoring; when they want to give strong doses, a dose of antimony, of tartar emetic, of calomel, or rhubarb, they want a vehicle in which to give it; they do not want to give it too strong, and therefore those powders have been commonly known throughout the trade as compound horse powders. They have been sent all over the country for years and years, long before I can remember anything; they were made up with articles such as aniseed; the aniseed was the flavouring; they were made up with the most simple article that could be found, either lignum vitæ or rape cake; after the oil is extracted from the rape seed you get as simple a thing as can be; it is birds' food; the lignum vitæ, or the rape cake, was made the basis of the addition that was wanted. Now that was one thing which the wholesale trade always talked of as being rather a foolish and bad custom, and they desired to get rid of it, but it has been kept up to the present time. That is really the plan of supplying what are commonly called compound horse powders. When the improvement in the drug grinding commenced it went on, and we found the increase so considerable that, from the year when we began, we have got up to between 500 and 600 per cent. increase. With regard to the discouragement of these horse powders, we never liked the names of them; the druggists discourage them, but we do not know how to stop them. I find they have decreased, while we have a great increase in the preparation of medicines upon the improved system, amounting to 500 or 600 per cent. increase.

2870. Do you think that the materials employed in horse powders are used exclusively as medicines for cattle, or are they ever used as medicines for human beings?—We cannot tell that; they are made according to direction and sold.

2871. What is your opinion?—I could not form an opinion. I have no access to the shops where they are sold.

2872. You are not prepared to state positively that they are not used as medicines for human beings?—No.

2873. All your evidence upon this point is, that the preparation of compound horse powders of this kind is much less than it used to be?—As far as our experience goes. I do not know that it may be the same as others.

2874. You still continue to prepare them?—Yes; they are still required to be made. I should like to see them cease; if this Committee said that they should, they would cease tomorrow.

2875. For what class of retailers do you prepare these horse powders?—We do not prepare for retailers; they are prepared for the wholesale druggists, who circulate them throughout the country. I must tell the Committee the difficulty I have felt. This branch of business has been mainly under my supervision; the

the mechanical part of my business. The Apothecaries' Company laid before the Committee evidence to show that they had the power of inspection, and the College of Physicians have the power by law to inspect, but they have not exercised that power; they have foregone the inspection; in all these questions it has thrown a great onus upon those who have had to conduct this business, because checks might have been given and improvements might have been suggested which would have more force coming from a public body; but they say in their account of their charter and their proceedings, that they found the conduct of the inspection so very disagreeable, and attended with so many unpleasant incidents, that they gave it up.

2876. The Committee are to understand that you individually would wish them to exercise the inspection more vigorously?—I have very often thought so. I shall come to evidence by-and-by as to what we have to do with regard to drugs. I cannot explain that to the Committee without going into a more important part of the subject; the character of drugs; the different varieties of quality, and what the analysers who have been before the Committee have reported to be the real state of the case. I must explain to the Committee the character of drugs, and then when I do that I shall show you the very great necessity, in my opinion, of some inspection.

2877. Mr. Wise.] Do you think the venders of articles of materia should be liable to inspection?—Yes.

2878. Does not the price of scammony vary from 7s. to 48s.?—To 45s.

2879. Of course the administration of a small dose of a drug of an inferior quality has a very different effect to a small dose of the best quality; if we could have a system of supervision you would approve of it?—Yes.

2880. Would you see any objection to every chemist and druggist having a licence, and being subject to supervision?—That is a matter for legislation. I think there ought to be some searching check.

2881. Do you think there should be some check upon the importation of adulterated drugs?—I think after the drugs are imported such a separation takes place that it would frustrate all the efforts at the beginning.

2882. Mr. Moffatt.] Can you inform the Committee as to what measure you would impose upon the importation of drugs, in order that they should reach the public in a pure state?—I would establish an Analytical Board, with power.

2883. You think that would not be objected to by the druggists and chemists throughout the United Kingdom?—No; I see the efforts of wholesale druggists in preparing the best articles. I have had conferences with them, both as to the mode of preparation and the articles themselves; I know, in contradistinction to the evidence which has been given before this Committee, that medicines are to be bought of the most perfect kind; I am not talking of opinion, but of fact.

2884. Mr. Kinnaird.] Does not the very fact that medicines can be bought of the most perfect kind, imply that there is a vast amount of inferior kinds sold?—Of course.

2885. You can by a great effort buy a perfect article?—No great effort, the simplest effort.

2886. Mr. Moffatt.] I presume you would have government inspectors as well as an analytical board?—Yes.

2887. With the power of examining the drugs of the various venders throughout the country, taking samples of those that they believe to be impure?—Yes.

2888. What consequence should follow upon the discovery of impure drugs?—That is a matter for the Legislature.

2889. Mr. Gregson.] Do you think that fine and imprisonment should be employed?—I have not considered that point.

2890. Mr. Moffatt.] Your belief is, that the druggists throughout the kingdom would acquiesce in a general inspection of the drugs which they sell?—Yes.

2891. Mr. Gregson.] What you say would apply to a thorough examination of all drugs, whether powders or any other preparation?—Yes.

2892. You would have this analytical board in London?—Yes.

2893. How would you deal with the provinces?—I would have branches.

2894. Mr. Wise.] Will you state to the Committee the different characters of  
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Mr. W. Atkinson. rhubarb?—There are several kinds of rhubarb sold; there is some comes from Russia; it is grown in Tartary, and comes through Russia; that is reckoned the finest quality. Then comes the China rhubarb, which used to be called East India; and then comes the English rhubarb. The Tartary rhubarb is almost universally sound and good; that coming from China is in great variety. You may have an inspector, or anybody else, to see a chest of fine looking rhubarb, but when it comes into the hands of the dealer it is found to be of very different quality. You see by Mr. Warrington's evidence before you, he says that the Apothecaries' Company take very great precaution; with regard to rhubarb, they buy nothing which has not been broken to ascertain its soundness. When I am in my drying-room I see rhubarb as fine as Mr. Warrington sees broken for the purpose of ascertaining that it is all sound. I see other rhubarb; I see the separation that practically takes place. I see that fine kind which Mr. Warrington describes as being sold to the rich, and I see the second or third quality, down to what is called English rhubarb, as low as, Mr. Warrington says, about 4 *d.* a lb. The Committee will observe the very great difference of the quality of the article of rhubarb, sound, second degree of soundness, and perhaps a third degree of soundness.

2895. Mr. Peacocke.] What you mean to say is, that, generally speaking, there are different classes of drugs, and that much better articles are provided for the rich than are provided for the poor?—Yes.

2896. Mr. Gregson.] You speak of different qualities of rhubarb?—Yes.

2897. You do not speak of any adulteration in any case?—No; there is no resort to adulteration at all.

2898. Mr. Wise.] Because English rhubarb is so cheap?—Yes.

2899. Chairman.] You mean to state that there are different qualities of rhubarb, some good, and some bad?—Yes, and they are sold accordingly; if a member of the Committee were to go to the best house, and ask for the best powdered article, they would get the finest article, and they would pronounce it superior perhaps to the article sold at Apothecaries' Hall.

2900. Mr. Gregson.] Does the statement you have made with regard to rhubarb apply to other drugs?—Yes; there are one or two more important than that; there is bark.

2901. Is bark divided into the same different qualities as rhubarb?—Not exactly; the deterioration of rhubarb is mainly according to the soundness; bark has a natural variation.

*Mercurii, 9° die Aprilis, 1856.*

#### MEMBERS PRESENT.

Mr. Scholefield.	Mr. Swift.
Mr. Wise.	Viscount Goderich.
Lord Claud Hamilton.	Mr. Moffatt.
Mr. Gregson.	Mr. Kinnaird.
Mr. Peacocke.	

WILLIAM SCHOLEFIELD, Esq., IN THE CHAIR.

Mr. James Drew, called in; and Examined.

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2902. Chairman.] YOU are a member of a firm of Wholesale Druggists in Bush Lane, in the City?—Yes; Drew, Heyward and Barron.

2903. You have heard some of the evidence which has been given to this Committee in reference to what are considered the frauds practised by some druggists?—I have.

2904. Does your experience confirm the evidence which has been given upon that head?—It does not; it is totally at variance with it.

2905. With

2905. With reference to the points to which you yourself speak, are you speaking for the trade generally, or are you speaking for yourself and for such other members of the trade as you are acting with upon the present occasion?—I can only speak for myself positively, of course; but I would rather speak as to the facts connected with certain articles than I would to the affairs of any individual.

2906. You are about, I understand, to state, that in your own establishment, at all events, and probably in the establishments of certain persons known to you, the practices which have been alluded to by previous witnesses are not in use?—I can safely lay my hand on my breast and say that no adulteration ever took place in my house, and I firmly believe there are men in the trade as honest as I believe myself to be.

2907. On the other hand, you cannot, I suppose, go so far as to say that those practices are not in use amongst certain members of the trade; they may be wholly without your cognisance?—I cannot say that, but I can show the absence of motive; the adulterations that have been alleged to have taken place are quite incompatible, and are almost impossible, inasmuch as in the absence of motive two incompatible things having been said to be mixed together it renders them impossible; and not only so, if the general adulterations that are said to have taken place, had taken place, the articles would be so altered in their character that they would be perfectly unsaleable.

2908. Will you be good enough to state such leading articles as, in your opinion, confirm the impression you have now endeavoured to convey to the Committee?—I have taken an abstract of a few, which I will mention as briefly as possible. Annatto is said to be adulterated with various substances; amongst the rest, with turmeric. If the Committee like I will put before them a specimen of turmeric and annatto, showing the impossibility of their being mixed together. Here is a sample of annatto as imported (*producing the same*).

2909. That is pure annatto, I presume?—That is pure annatto as imported. Here is a sample of turmeric (*producing the same*).

2910. In what way do you mean the Committee to understand that the admixture is impossible; do you mean to say it is impossible in point of colour?—You see the two articles there; it is quite impossible to mix the one with the other; the one is a root and the other is a sort of butter.

2911. Do you mean to say it is impossible to grind them?—Yes. In order to be prepared for that, I have a sample of turmeric in powder; the two are quite incompatible articles.

2912. Have you mixed those two articles to see the effect?—No, I should never dream of such a thing.

2913. In order that you may arrive at a positive conclusion, must you not know the effect produced by mixing them or by attempting to mix them?—I do not see that.

2914. Lord C. Hamilton.] Is it essential to the purity of annatto that it should present so bright a colour?—Yes.

2915. Mr. Moffatt.] The annatto has a soapy appearance?—Yes; that is an article that comes from the Brazils.

2916. Chairman.] Does it come in that soapy state?—Yes.

2917. Mr. Wise.] What is annatto produced from?—From the seed of the annatto plant.

2918. What is the price of it?—That cost 7 *d.* a pound.

2919. It is not itself a dear article?—No.

2920. Mr. Moffatt.] Is it not susceptible of being dried and pulverised?—It never has been done.

2921. Would it be difficult to abstract the moisture?—Yes; very difficult indeed.

2922. Assuming that could be done, annatto and turmeric could be mixed?—Yes.

2923. What is the cost of turmeric?—The price of turmeric is from 4 *d.* to 5 *d.* a pound; the grinding of the turmeric would bring it up to the same price as annatto.

2924. There is only a difference of 2 *d.*, and the grinding of the turmeric would realise the price of annatto?—Quite so.

2925. Chairman.] Have you any doubt as to the adulteration of annatto?—Yes.

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2926. You

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2926. You do not think any adulteration of annatto exists?—I do not.

2927. Mr. *Wise*.] Did you ever hear that it was mixed with red lead?—No.

2928. Is that the natural colour?—Yes, precisely as imported.

2929. You have no reason to believe that certain articles are mixed with red lead, and sold for annatto?—No.

2930. You think there is no temptation to do it?—No; the same observation runs throughout the whole of the articles said to be adulterated.

2931. Mr. *Moffatt*.] Will you be good enough to state some other articles in illustration of your position?—East India arrowroot is said to be adulterated with sago and tapioca; East India arrowroot is worth about 2 *d.* a lb.; sago is worth about the same price; tapioca is worth about 7 *d.* to 8 *d.* I have taken these samples to show to the Committee that the mixing of sago and tapioca with arrowroot is just as impossible as mixing annatto with turmeric. When we read these statements we are only surprised that such evidence could be given before a highly respectable Committee of the House of Commons, because it is so easily contradicted.

2932. Would it not be possible to pulverise sago and tapioca also?—They might be pulverised, but they are never sold in that state.

2933. Would not the effect of pulverising the sago be to make it of a perfectly brown colour?—I think it would.

2934. *Chairman*.] In the first place, these things are never sold in a pulverized condition, and therefore adulteration is not practised, and tapioca is dearer than sago?—They may be sold in powder, but are not by wholesale druggists.

2935. Do you mean to say that it is the custom to sell them retail in powder at all?—I do not know that it is; there is an article called patent sago.

2936. Lord *C. Hamilton*.] It was not alleged, was it, that tapioca and sago were main ingredients with which arrowroot was adulterated?—Yes, it was.

2937. *Chairman*.] Whose evidence are you alluding to?—I think it was Dr. Hassall's.

2938. Take the next article?—Cinnamon is said to be adulterated with cassia; it is but a short time since that cassia was the dearer of the two.

2939. Is there any material difference now?—There is no very material difference between the cost of low priced cinnamon and good cassia.

2940. Mr. *Moffatt*.] Would it be possible to adulterate cinnamon with cassia?—Only in the shape of powder; as far as the statistics of these things go, if they are interesting to the Committee, I can mention a curious circumstance which took place a few months ago. Cassia was exceedingly scarce, and cinnamon of an inferior quality was sold as cassia.

2941. Is there much cinnamon sold in a pulverised state?—Not a great deal.

2942. Reviewing the course of years, I believe cinnamon does rate ordinarily at a higher price than cassia?—It has been low for some years since the trade has been opened with Ceylon.

2943. Cinnamon was cheaper than the cassia with which it was stated to be adulterated?—Yes.

2944. What is the next article which you would allude to?—It is said that cayenne is adulterated with rice; that is open to the same objection. I have a specimen of cayenne pepper which I have sold for 25 years. I have been 30 years a principal in the trade, and 10 years an apprentice and assistant.

2945. But cayenne is susceptible of adulteration with substances which will mix therewith without being easily detected, and which will very much reduce the cost?—Clearly.

2946. Are you aware whether the practice of adulterating cayenne is customary amongst respectable wholesale druggists?—I do not think it is with respectable wholesale druggists; it has been acknowledged by some pickle houses that they have adulterated it.

2947. You would learn from your opponents if they did adulterate, from their being able to sell at a lower price?—It is not an unfair way of judging of our opponents; when we are undersold we fancy that they have some means of getting money which we have not.

2948. Have

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2948. Have you found, with regard to cayenne pepper, that such a practice exists?—We have been very much undersold by pickle houses, but not by druggists.

2949. *Chairman*.] With regard to arrowroot, I find the statement made as to the material used for adulteration is, that in most instances it is adulterated with potato flour; it is only one case in which tapioca is alleged to have been used?—There is little difference of value between low arrowroot and good potato flour.

2950. What is the difference between the price of good arrowroot and potato flour?—A good sound arrowroot might be bought for 4½ *d.*, and potato starch is worth 3 *d.* at this moment.

2951. Are you speaking of the highest price of arrowroot?—The lowest price of arrowroot.

2952. The probability is the lowest quality would be used to adulterate the quality sold as the highest?—The highest is 16½ *d.* There is a wide difference between the two articles. It would be seen the moment that boiling water was put to the adulterated article; it would not make the same jelly that fine Bermuda arrowroot does.

2953. Mr. *Moffatt*.] The fraud would carry its own detection?—Yes; any cook would see the difference in a moment. Those accustomed to use it would see the difference in a moment without any trouble.

2954. Lord *C. Hamilton*.] If the practice of adulteration was general the detection would not be so simple would it?—Persons in the habit of buying their arrowroot at a respectable shop would know.

2955. You have shown the great difference of prices that exists; possibly your attention not having been particularly addressed to the subject, this practice may be more common than you have led the Committee to believe just now?—I have shown the impossibility of lowering some things with others.

2956. Will you state the exact portion of the evidence you are combating. Where is the allegation with respect to cassia and cinnamon?—I make these observations from the evidence that has appeared, without reference to any persons. I would not wish to make any personal remarks if I can avoid it.

2957. Mr. *Moffatt*.] You found these statements on the evidence given before this Committee, which has been officially published?—Yes.

2958. Lord *C. Hamilton*.] Do you mean that cassia was stated to be the only material used; might not other inferior articles, having cassia mixed with them to convey the quality that was wanting in the other materials, be used so that the whole of the foreign material that was used for the purpose of adulteration would contain a small portion of cassia only?—I did not read it so.

2959. Do you mean that Dr. Hassall said that cinnamon was adulterated, and that the only material used was cassia?—The note I took is, "Cinnamon is adulterated with cassia."

2960. You allege that cassia is the dearest of the two, or there is so little difference in the price that that cannot be the case; supposing, on examination, it turned out that cassia was only one of the ingredients, then your theory would fall to the ground, would it not?—I did not expect to be asked these questions. I merely took a general memorandum.

2961. *Chairman*.] With regard to arrowroot; if you assume that the mixture with arrowroot is sago, I can well understand that there is no inducement to mix the two together; but referring to that portion of the evidence which states that potato flour is used with arrowroot, is there not a very strong temptation to use potato flour in the best kind of arrowroot, because potato flour is worth only 3 *d.* a pound?—The temptation would be more to use low arrowroot to adulterate the higher description than potato starch, which could be detected with a microscope.

2962. Mr. *Moffatt*.] It appears from the evidence of Dr. Hassall, at page 21, it is distinctly stated that cinnamon is adulterated with cassia; I presume it is upon that you have given your evidence?—Precisely.

2963. Dr. Hassall goes on to state that cinnamon is adulterated with cassia, and most of the articles that are mentioned under the head of spices; are you aware that spices are adulterated?—I do not believe any of them are.

2964. Would it be possible to adulterate cloves, for example?—Cloves are very seldom used in powder.

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2965. Is mace?—Mace is never used in powder; I believe that cooks use mace only in the blade.

2966. *Chairman.*] Take the next article, if you please?—Ipecacuanha is said to be adulterated with chalk; it is quite an impossible case; no one would dream of using such a material. It is exceedingly difficult to deal with this evidence, inasmuch as the gentlemen who give the evidence do not state whether they are treating of the article as imported, or whether they are treating of it in a prepared state. The drugs, chemicals, and galenicals, are all mixed up together, so that it is an exceedingly difficult thing to bring it clearly before the Committee. If the Committee were at my warehouse I could put things before them which would show that the way in which the evidence has been taken makes it exceedingly difficult to deal with it. Jalap is said to be adulterated with powdered wood; that would be very easily detected; it would be shown by the microscope; even a ray of the sun coming upon it would show it.

2967. Do you think that persons when purchasing these articles use a microscope?—There is a very great spirit of inquiry about; since the establishment of the Pharmaceutical Society things are very much improved in that respect. Individually, I think the microscope a very fallacious mode of judging, because a man may honestly send out an article that has undergone decomposition, and not know it; the very article of powdered jalap cannot be microscopically properly examined, for this reason. I have seen powdered jalap one moving mass of animal matter, having been quite altered in its structure; no doubt it had gone through the stomachs of those animals. There is much importance in the keeping of the articles, and this has not been brought before the notice of this Committee. I have carefully read the evidence. There is really as much importance in properly keeping and looking to those articles so liable to decomposition as in having them genuine at first. I believe a great deal of the error which has been fallen into has arisen from that circumstance, that persons from inadvertence, and not understanding the nature of the articles, have not been sufficiently careful.

2968. From the observation you have just made, I infer that you think there was considerable room for improvement; you intimated that the Pharmaceutical Society has been of considerable service?—I do not know that there was considerable room for improvement with those who did their trades honestly.

2969. This inquiry would never have been originated if we had been dealing only with honest traders; it is because there is a large class of dishonest traders that it has arisen, therefore it is with them we have to deal. I presume there were dishonest traders previous to the existence of the Pharmaceutical Society; has the existence of that society tended in any degree to check the adulteration of drugs?—I do not think it has; I think it has promoted a spirit of inquiry.

2970. In what respect do you speak of the Pharmaceutical Society as having been beneficial?—As having been the cause of inquiry being made; you have had it stated to you that the Pharmaceutical Society instituted an inquiry into the mode of grinding drugs; the inquiry they instituted turned out very satisfactorily. You have also been told that nobody uses in the present day what was called the four per cent. system. I have never used it; from the earliest period of my career all drugs have been ground with their natural loss. I have a table to show that, extracted from my own books.

2971. Viscount *Goderich.*] Do you believe that that system did exist at any time in the trade?—Before I was in the business.

2972. You do not believe it has existed in the trade since you have been in the business?—I do not think it has existed in the trade since I have been engaged in it.

2973. Do you think it exists at all now; I do not refer to your own house, but to the London trade generally?—I do not.

2974. Lord *C. Hamilton.*] Within what time has the great improvement you have just alluded to been exhibited; you said a great improvement had ensued from the establishment of the Pharmaceutical Society?—I said that the Pharmaceutical Society had given rise to a spirit of inquiry.

2975. Mr. *Wise.*] The Pharmaceutical Society was established notoriously to elevate the character of the chemists, was not it?—No.

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2976. Have they not taken a great deal of trouble to promote the purity of drugs by a new system of grinding?—No; I do not know that they have interfered.

2977. *Chairman.*] You do not think that the establishment of the Pharmaceutical Society has tended in any degree to prevent the adulteration of drugs?—I do not think it has.

2978. It appears in evidence that such has been the effect?—It is contrary to the evidence I am about to give you upon another point, which I think will render the subject very clear to the Committee.

2979. Mr. *Wise.*] What is the price per pound of the best jalap from Mexico?—Two shillings and fivepence to 2 s. 6 d. per pound.

2980. Might not that, after it has been ground, be mixed with flour to an injurious extent. Have you ever heard that it was mixed with flour?—No.

2981. Am I correct in assuming, with respect to the property ascribed to jalap, that only about 10 per cent. of the jalap has any effect upon the constitution?—I should not like to take a dose of powdered jalap from which 10 per cent. of any material composing it had been taken, the component parts are so various. Here is a sample of opium; if you take from it all the morphia you will still leave other salts, which are not only very powerful but very valuable; and it would be the same if you were to take the jalapine from jalap.

2982. If jalap be adulterated with flour to any extent, of course that 10 per cent. of active principle would not exist, and a medical man would find that his prescription had a different effect from what he expected, would he not?—No doubt; if he ordered powdered jalap and the jalapine had been removed, it is impossible to say what would remain. The gentlemen who profess to have examined these vegetable matters do not seem to me, as far as I can judge of their evidence, to have known anything about them.

2983. If a medical practitioner expressed great disappointment at the effect that jalap had produced upon his patients, to what would you ascribe that?—The first thing I should do would be to examine it, to see if it had become decomposed.

2984. Do you mean by decomposed, a root that was unfit for grinding having been ground?—No; that the powder itself had undergone decomposition, which it will from damp, and various other causes; even exposure to light will alter its structure.

2985. What is generally done with this decomposed powder?—Nothing ought to be done with it; it ought to be thrown away.

2986. What is done with it?—I do not know; our sale is very quick for these things; we never have them.

2987. Viscount *Goderich.*] Are you in the practice of mixing lignum vitæ with any of your powders?—No.

2988. Do not you think that that practice, if it did exist, would be likely to affect the powders and injuriously to weaken their effect?—No question it would.

2989. You think it was an improper practice?—Very improper.

2990. Do you believe it ever existed in the trade?—I have heard of it by tradition.

2991. Why do you think that that practice was resorted to at any time?—Only for the purpose of making the article cheaper and more profitable.

2992. It was consequently a fraud in your opinion?—Clearly so.

2993. *Chairman.*] What is the next article upon which you wish to remark?—It is stated that curry powder is adulterated with rice; rice is commonly an ingredient in curry powder; most houses have different formulas, therefore it hardly applies. Ginger is said to be adulterated with turmeric; low ginger and tumeric are so near of a price that there is no motive for it.

2994. Mr. *Moffatt.*] What is the difference in price?—African ginger is worth from 2½ d. to 3 d. per pound; and the lowest turmeric (it is not fair to take the present price, because it is scarce and dear now) is worth from 4 d. to 5 d.

2995. *Chairman.*] What is the highest price of ginger?—The highest price of ginger is from 1 s. 9 d. to 1 s. 10 d.

2996. Is it not palpable, that although there is no inducement to adulterate the lowest qualities of ginger, there may be a very strong inducement to adulterate the highest quality with a material very much cheaper?—Then we come

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back to the former proposition, that a person wishing to adulterate a high quality of ginger would adulterate it with a low ginger, low ginger being the cheaper of the two.

2997. That is your opinion?—It is self-evident that a person would take the article itself rather than one that was higher in price, and not at all analogous.

2998. Cannot you imagine any reason for employing turmeric, to improve the colour, for instance?—I do not think it would improve the colour.

2999. Mr. *Moffatt*.] You think it would be rather more advantageous to adulterate the finer descriptions of ginger with the lowest descriptions of ginger, than turmeric?—Clearly.

3000. Lord *C. Hamilton*.] Would the powder of the lower kinds of ginger mix as well with the finer powder of the superior quality as turmeric?—Better than anything else.

3001. Better in point of flavour?—Yes. I do not think that turmeric would mix with the best ginger; it would make it of such a colour that it would be objected to.

3002. *Chairman*.] You have stated only one of the ingredients. There are many other articles mentioned in evidence besides turmeric, for instance, potato flour and cayenne pepper, and mustard husks?—I never heard of such things being mixed with ginger. It is in evidence before the Committee that some person ground four cwt. of Turkey rhubarb; I heard that evidence given myself; I mentioned it on Change, and the people there treated it with the utmost derision; they said no house in the world ever ground four cwt. of Turkey rhubarb.

3003. Mr. *Moffatt*.] In what period of time?—At once; the person who gave that evidence said that he had mixed two cwt. of English rhubarb with it. The largest houses in our trade do not grind above one cwt. That is a large quantity to grind to keep good.

3004. It never has been known, in your experience as an extensive wholesale druggist, that four cwt. of Turkey rhubarb has been ground in any one day?—No; a very large quantity being one cwt.

3005. Mr. *Wise*.] Do you mean to state that British rhubarb is not used very largely in this country?—Not to the extent that has been stated in evidence. It is in evidence before this Committee that there are 20 tons grown at Banbury. The grower at Banbury stated that he never grew more than six or seven tons. It is unfairly brought before the Committee, because the person who said that 20 tons were grown, should also have informed the Committee what portion of it was exported; it leaves the inference that it was all consumed in England. The person who stated that should have stated also what portion was exported to America, and what portion was used by the Irish poor-law unions.

3006. Mr. *Moffatt*.] Do you think he had the means of acquiring that information?—Not exactly perhaps; but by inquiry he would have found that large quantities were exported.

3007. Mr. *Wise*.] What is the price of the best Russia rhubarb?—Twelve shillings a pound.

3008. What is the price of English rhubarb?—Cuttings are about 48s. a cwt.

3009. Lord *C. Hamilton*.] You say that you think it was hardly fair that the person who gave this evidence did not further state what became of all the British rhubarb; surely he was not able to follow that out?—If he were acquainted with the fact that 20 tons of rhubarb were grown, he should be acquainted with the fact of its being exported.

3010. How should he know that any went to the Irish poor-law unions?—How should I know it myself?

3011. How do you know that that is the practice?—I supply many large houses in Dublin with large quantities of powdered rhubarb.

3012. How do you know that it is destined for the Irish poor-law unions?—From the statistics that have been published. It is sold to them at 8d. a pound.

3013. What do you sell it as. Do you sell it openly as British rhubarb, knowing its destination?—Yes; its destination was from me to the wholesale houses in

in Dublin. I know only what was published, that it was used in the poor-law unions.

3014. Mr. *Wise*.] It is notoriously less active in its effect than foreign rhubarb, is it not?—It would require a very large quantity to produce the same effect.

3015. Are you aware that the practice of using English rhubarb has been authorised by Dr. Pereira?—Dr. Pereira was a very clever man, but he was not very well-informed upon these subjects.

3016. Viscount *Goderich*.] Do you consider that it is a fair proceeding to sell this rhubarb to the poor-law unions to be used by the paupers?—If it is sold for what it is; if it is sold for good East India rhubarb, I should say it is a very great fraud.

3017. You do not suppose that the paupers would get much good from that rhubarb?—They would not get much good from that rhubarb.

3018. Lord *C. Hamilton*.] Supposing drugs are supplied by contract to those unions, do you think it is fair and right that they should buy this article?—I do not think it is.

3019. You appear rather to blame the witness for saying that a great deal of this article was brought into the trade?—Yes, because it left an unfair inference; it left the inference that it was consumed in the trade.

3020. It is consumed amongst the Irish at any rate?—That is the great consumption in this country, but a vast quantity is exported.

3021. Mr. *Moffatt*.] What quantity is exported?—I can only guess; it depends upon the orders that come. I have perhaps exported four or five cwt. in the course of the year.

3022. Viscount *Goderich*.] Do you think the great consumption of English rhubarb is by the paupers in Ireland?—I think the great consumption is the export.

3023. Mr. *Wise*.] Is any of it exported to Spain?—No.

3024. *Chairman*.] Do you know that English rhubarb is used in some of the London hospitals?—Yes.

3025. Do you know also that some eminent men are of opinion that it is beneficial?—Yes. I have heard so.

3026. Mr. *Moffatt*.] With regard to 20 tons of rhubarb being grown by one grower near Banbury, are you aware that he stated positively to the Committee that his growth was seven tons?—I heard him say so.

3027. Lord *C. Hamilton*.] Are you prepared to say that there are no other growers that grow two or three tons each?—I do not know of any.

3028. You cannot say that it is not the fact?—No.

3029. Therefore, any inference to be deducted from the statement that 20 tons were brought into the trade, may be true for aught you know?—The evidence was given as to what was grown at Banbury, and that person said he only grew seven tons.

3030. There may be other growers growing two or three tons to make up the aggregate of 20 tons?—I do not think there would be any other grower without my being aware of it.

3031. *Chairman*.] What is the next article you wish to remark upon?—Those are all I have taken out. I thought they would be sufficient to answer the purpose I had in view.

3032. Will you state to the Committee your opinion as to the existence of adulteration of drugs?—I do not believe it exists in London.

3033. You are speaking of wholesale druggists?—Yes. It is quite impossible that I can say what passes in other houses, but I do not believe it myself. I believe it is a very respectable trade, generally speaking; there are black sheep in all trades.

3034. Is it not a trade that affords considerable facilities for adulteration?—Very considerable.

3035. Mr. *Moffatt*.] Do you find, between your prices and the prices of your competitors in the wholesale drug trade, such a difference as leads you to believe that your competitors sell articles that are adulterated?—Yes, we do sometimes.

3036. With respect to houses of some standing?—Yes.

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3037. To that extent you believe that adulteration does exist amongst respectable wholesale druggists?—As I said before, there may be ways of getting money that I am not acquainted with.

3038. But taking the trade as a whole, your belief is that adulteration does not prevail amongst wholesale druggists?—I do not believe it does.

3039. Mr. *Wise*.] Do you believe it would be any advantage if there were a check or supervision with respect to the importation of drugs?—I do not think it would. The supervision system has been tried in America, but it has not been found to answer. The drugs which have been refused at New York have found entrance at Boston or Philadelphia; and those rejected at Boston and Philadelphia have gone into New York.

3040. Do you see any objection to chemists and druggists being licensed, and being subject in any way to supervision?—I think the supervision of the College of Physicians would be a very good thing; they have the power by law now, and I think if they exercised it it would be a very good thing.

3041. Why do not they exercise that power?—I do not know.

3042. Are there not frequent complaints from medical men of the character of the medicines that are used?—I never heard them.

3043. Not in the poorer districts?—No.

3044. Lord C. *Hamilton*.] Is it not the case that a great number of the articles that come to you, as a wholesale druggist, from abroad, come in a very impure state?—They do.

3045. It hence arises when you import an article, you know that you will only have an adulterated and impure article?—It is not our business to import, but we are driven to import goods ourselves because we cannot obtain supplies from the merchants.

3046. So that commercially an article is known to be an article not thoroughly pure?—Yes; it is in proportion to a man's conscience, and according to what he deals in. I believe there are others besides myself who are most anxious to get the best supplies that can be obtained.

3047. Is it not the case, from your knowledge, that drugs come frequently in so impure a state that you are obliged to purify them before you can exhibit them to the public as pure articles?—I endeavour to buy pure articles so as not to require it. The two articles that have been so much spoken of before this Committee, and the only two of much consequence in the whole inquiry, have been opium and scammony. This sample of opium was taken from the bulk of a chest from which we are selling (*producing the same*); it is perfectly pure; there has been no picking.

3048. Does any opium come from Turkey?—Yes; direct from Smyrna and Constantinople, but not from Aleppo, as the Committee have been told.

3049. Mr. *Wise*.] The opium you have produced, you say, is as pure as can be?—Yes.

3050. Is it not obliged to be mixed with some substance?—No; unless by design. You are aware that these things are collected in such a way that there must naturally be some mechanical impurity adhering to them; but there is no design. That is perfectly pure opium.

3051. What is the difference between this opium and Egyptian opium?—They are totally different articles. Egyptian opium is, perhaps, as good a mechanical preparation as Turkey opium when it comes genuine; but latterly Egyptian opium has been bad, and we have not been able to sell it.

3052. Mr. *Moffatt*.] What is the character of the East India opium?—No doubt the East India opium is very pure, but it has never been imported in my day.

3053. It is not found to be rendered so cheap in this country as that from Constantinople?—They have a better market for it in China.

3054. *Chairman*.] It has been stated before this Committee that in the analysis of 23 samples of opium no less than 19 were adulterated, four only being genuine?—The person making that statement must have been very unfortunate in his experience.

3055. You do not confirm that as being at all general?—Certainly not.

3056. Do you think poppy capsules and wheat flour are used to adulterate opium?—Poppy capsules are used in Turkey, but I do not think wheat flour is used.

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3057. Viscount *Goderich*.] You said just now that the system of inspection or importation in America had failed; what ground had you for making that assertion?—I know that certain things that have been rejected at one port, have found admission at another, owing to there being different opinions amongst the inspectors.

3058. How do you know that?—I know it from the house of Maclean, Maris and Company, large American merchants in New York and in London.

3059. They have stated to you that goods rejected at New York were taken at other towns?—Yes.

3060. Does that system of inspection extend to all the states of the Union?—Yes.

3061. Mr. *Moffatt*.] Are you sure that that system extends to all the states of the Union?—I informed myself upon the subject by asking the best source that I could; I have no doubt about it. In order that my own evidence should be clear and distinct, I asked Mr. Maris, of the house of Maclean, Maris and Company, and he confirmed my previous notion.

3062. Viscount *Goderich*.] Your evidence would only prove this, I suppose, that the Customhouse officers in other towns were less upon their guard than those at New York?—They are medical inspectors; the reception at one port of what has been rejected at another arises from a difference of opinion.

3063. Mr. *Moffatt*.] From a difference of opinion in the medical inspectors?—Yes.

3064. If there were the same system in the United Kingdom, would not the same difference of opinion be likely to arise at the different ports of the United Kingdom?—Yes; I do not see who you can get to be inspectors; you must either get a broken down tradesman or a philosopher, who is not acquainted with the nature of the article.

3065. You have produced a sample of pure opium; assuming opium to be imported with five per cent. of impurity, what course would the inspector have to follow in case a law was passed that none but pure drugs should be imported?—He would necessarily reject it.

3066. Are not the great majority of the drugs more or less mixed with impurities?—Not the great majority; a great many are; those two leading articles, opium and scammony, to which the attention of the Committee has been more particularly directed, are the two most open to that sort of thing.

3067. What proportion of the total importation of opium is perfectly pure?—It is impossible to give more than a guess, because it is all entered the same.

3068. Would you, from your experience, think that one-fourth of the opium imported was entirely free from impurity?—I should say half.

3069. And the other half would be more or less mixed with foreign ingredients?—Yes.

3070. Mr. *Kinnaird*.] I think you stated that the sample you produced was perfectly pure, except the dirt which is necessarily connected with the collection of the opium?—There is the coat; there is no dirt.

3071. Do you suppose an inspector would have a difficulty in distinguishing between the natural impurity necessary in collection and an article adulterated for the purpose of fraud?—I think there would be the greatest possible difficulty in finding a person who could so distinguish; there are very few good judges of opium in London.

3072. Do you suppose that a man accustomed to it, and whose duty it would be to examine specimens of opium, would have any difficulty in distinguishing between natural impurity and an article adulterated for the purpose of deception?—I think he would have the greatest possible difficulty unless he had been accustomed to the article from his earliest youth.

3073. Do not you suppose that the Government would appoint a qualified person?—Where will they get him? It must be a man accustomed to the trade.

3074. *Chairman*.] Has the American Government any difficulty in finding inspectors?—They appoint inspectors, and the articles that some reject others pass.

3075. Is not it the general result, however exceptional at times, that the importation of adulterated drugs has materially declined in America, and that the drug market there is very much purified; do you know that fact or not?—I have only one means of judging of that, namely, by what they send us from America;

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America; we look very narrowly indeed at what comes from America; I myself would not buy any article coming into the market from America.

3076. Lord C. Hamilton.] Does any inspection take place in America on exported drugs?—I do not think it does.

3077. A drug may have been imported very pure, and then manufactured into an article for exportation?—Very likely.

3078. Mr. Moffatt.] Your evidence goes to duty-paid drugs?—Yes.

3079. Does not it follow, that any drugs coming in bond from America would probably be goods which had been rejected, and not allowed to go into home consumption in America?—Yes.

3080. So far as that went, it would show the advantage of inspection?—Yes; but it is more likely to depend upon the state of the market than any rejection of that sort.

3081. What class of men inspect the drugs in America?—I do not know.

3082. Is there not an inspector in each of the five ports along the American seaboard?—Yes.

3083. Lord C. Hamilton.] The Americans are not particularly anxious to have restrictions placed upon their commerce; surely they would not have submitted to this inspection if they had not found a benefit to arise from it?—I cannot speak to that.

3084. Supposing persons wish to send in an impure article; its having to go through the ordeal of inspection, even though the inspectors from time to time differ, must deter the general practice of adulteration?—The only means of information I have are the published accounts of what goes into America.

3085. You stated, as an instance of the inefficiency of the system, that a person got into some other port articles which had been rejected at New York?—Yes.

3086. Is not the fact of his having failed in his original intention, evidence of a check?—No; he got it into another port.

3087. He had all the expense of taking it to another port?—That shows the uncertainty of the system.

3088. Mr. Wise.] Did not that arise from the want of proper supervision and good organisation?—I cannot say.

3089. If there had been a central council of health, for instance, who had arranged the details, and given proper instructions to their professors of pharmacy, would not the inspectors have come to a safer conclusion?—That is impossible for me to say. I believe the Board themselves would be obliged to call for the assistance of a wholesale druggist, who was acquainted with the articles.

3090. Are not professors of pharmacy thoroughly conversant with all the details?—I do not think they know anything about the drug trade; they have shown in their evidence that they do not understand it.

3091. Chairman.] Do you mean to convey to the Committee the impression that what are called pharmaceutical chemists are not persons competent to give an opinion as to the purity or impurity of drugs?—A pharmaceutical chemist, in trade as such, may be, but not those who are only professors.

3092. You think it is absolutely essential that a man should buy and sell, to be acquainted with the quality of drugs?—He should be acquainted from early youth with what he deals in. I will give you an instance: if I fail in my preparations I cannot call in a professor to assist me; if my people spoil a batch of plaster, from some chemical change that takes place in its relations, I have nobody that I can call to my assistance, to save my plaster, and I am obliged to throw it away.

3093. Viscount Goderich.] Do you mean to say that you think a distinguished medical man, or a professor of chemistry, would be entirely incompetent to pronounce upon the qualities contained in drugs?—Not unless he had made it his study.

3094. What do you mean by making it his study?—That he had like myself been in it from his early youth.

3095. Unless he had been in trade you mean?—Yes.

3096. In your opinion no study or knowledge derived otherwise than from being in trade would be of any avail?—I do not think it would qualify him for giving an opinion.

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3097. It seems to result from your evidence, that medical men with regard to making up their prescriptions must be entirely in the hands of the chemist?—They are generally, no doubt.

3097.\* And without a remedy?—Clearly so.

3098. Mr. Wise.] Are you aware of the origin of the inspector of drugs in America?—It originated in some infamous preparations being sent from Birmingham and Wolverhampton; they were barely imitations.

3099. Did not the necessity of that law arise from an immense number of spurious medicines being sent to America, anything being considered good enough for America?—Yes; an account was published in the Pharmaceutical Journal of some blue pill being sent, which was merely coloured with indigo and so forth.

3100. Are you aware that the Spanish government as lately as last December found it necessary to pass a strict law with reference to the importation of drugs from this country?—I am not myself conversant with the subject.

3101. Viscount Goderich.] You stated just now, that some advantage might be derived from the powers of the College of Physicians to inspect drugs, did you not?—Yes.

3102. What would be the good of an inspection by the College of Physicians if the College of Physicians is composed of persons who are entirely incompetent to pronounce an opinion upon the subject?—The very fact of a power of inspection existing would be a very wholesome check; they might make themselves acquainted with it. I am speaking more particularly of the drug trade than the prepared articles.

3103. Could they make themselves acquainted with it without engaging in trade?—That is a question which I can hardly answer.

3104. If not their inspection, in your opinion, would be useless?—My notion would go to this extent, that a man who is bred in the trade, and has been in it all his life, is more likely to be a good judge of the articles than a person who has merely a scientific knowledge.

3105. You think some members of the College of Physicians might be competent to perform that duty?—Anybody may learn if they chose; the great misfortune is that physicians go to undue sources for these things. Dr. Pereira, I believe, said that he went to every drug house in London; he never came to me. I just wish to make a slight allusion to myself, without wishing to appear egotistical. I sat here and heard the evidence of Dr. Nelligan, from Dublin, who said he had obtained a specimen of scammony from my house. I said to him as he went out, "Doctor, you have made a mistake; you and I are perfect strangers." He said, "I had it from Drew's house; I had this specimen of scammony." Upon going into the question with him he said he had it from a house in Bucklersbury; he asked me the name of the firm in Bucklersbury. I told him, and he said, "That is where I got the scammony." I insisted upon his coming back to contradict the statement he had made. I went to the house mentioned, and they said, "He got it from us 13 years ago." It shows you the nature of the evidence; when I asked Dr. Nelligan how he came to damage me by stating a thing of this sort, he said my name was uppermost in his thoughts.

3106. Chairman.] Is the only plan which suggests itself to you on the subject of preventing the adulteration of drugs, that which you have just named with respect to the College of Physicians employing themselves in inspection?—In the inspection of shops; I have different specimens of scammony to show to the Committee; it is not always a matter of price. Here is a specimen of scammony from Beyrout, sold 10 or 12 years ago at a low price (*handing in the same*). It is one of the purest things that ever came into the market. It is as good as this (*producing another sample of scammony*); that is what we call virgin scammony.

3107. Mr. Wise.] What was the price of the scammony from Beyrout?—It was sold to me at 13 s. Here is a specimen that cost 40 s. (*producing the same*).

3108. What is the difference between those two articles?—Not a particle, except that the Beyrout scammony is rather the purer of the two.

3109. And would have the greatest effect upon the human frame?—Yes, because it contains the largest portion of resin; it has been stated that scammony  
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contained so much scammony; if the gentleman giving that evidence had said that it contained more or less resin we should have understood him.

3110. Mr. Moffatt.] A very important witness has stated to the Committee that scammony is adulterated with sand, wheaten flour, gum guaiacum, chalk, and woody matter?—I believe it is possible to adulterate scammony with one of those articles, but only one.

3111. Viscount Goderich.] When you say that scammony can be adulterated with only one of those articles, do you mean one of those articles at a time, or only one particular article could be used?—Yes, only one.

3112. Which?—Resin of guaiacum.

3113. Mr. Moffatt.] You do not believe it is possible to adulterate scammony with wheaten flour or chalk?—Chalk could be easily detected by applying a drop of sulphuric acid; the resin of gum guaiacum would be very difficult to detect.

3114. Mr. Wise.] The price of scammony varies from 7s. to 40s.; although there is very little temptation to adulterate an article, may there not be temptation to contaminate by mixing inferior qualities with superior qualities?—That is true as to drugs generally.

3115. You have mentioned an instance in which you bought scammony at 13s.?—I am only speaking of that as a chance thing; that was one of the casualties of the market. Here is a sample of scammony, that is one of the most infamous things ever seen (*handing in the same*). This is offered for sale to-morrow.

3116. Mr. Moffatt.] What price will it sell for?—About 5s. 6d. a lb., if it sells at all.

3117. Viscount Goderich.] That article having been bought at 5s. 6d., is there no risk that it may, in the hands of the retailer, be sold at a very much higher price?—Yes.

3118. Would you not consider that a fraudulent proceeding?—Most undoubtedly.

3119. Do you consider that scammony useless?—Perfectly useless.

3120. If there were to be any system of prohibition of spurious drugs at the Custom-house, that scammony would be utterly rejected, would it not?—It would be excluded.

3121. Mr. Wise.] Where does the scammony come from?—Smyrna. You cannot make a law to control the Jews and Greeks at Smyrna and Constantinople; if you could, we should have nothing of this sort.

3122. Lord C. Hamilton.] You said that that last specimen of scammony was useless?—Quite so.

3123. Have you any doubt that it will find its way into the retail trade?—I do not know whether it will be sold.

3124. Mr. Moffatt.] If it is sold at 5s. 6d. a pound, would that be for export?—No.

3125. Lord C. Hamilton.] Is that specimen taken out of a small parcel?—No; the bulk of this is for sale to-morrow.

3126. There would be no encouragement to sell it unless it was ascertained that it would find its way into the trade; what is the form in which scammony is generally sold to the public in powder?—It is sold in various ways, but that is the form in which it is sold by wholesale druggists.

3127. Is not scammony generally sold to the public in the form of powder?—I do not know. I am not at all acquainted with the retail trade.

3128. Mr. Wise.] Is not scammony sent to the drug grinder's to be ground?—Some houses powder it at home.

3129. Knowing, as I do, that all the first-class chemists sell the very best articles of materia and drugs, what is your opinion with reference to the disposition of the vast amount of inferior and damaged drugs?—I think they find their way into provincial wholesale houses. I must not make any personal allusion, nor should I wish to do so at all to any particular class of persons. I believe they find their way to the provincial wholesale houses; but I give that as my own opinion only.

3130. Mr. Moffatt.] Do not the provincial wholesale houses usually buy their drugs of London wholesale houses?—No; a great many of them employ their own brokers.

3131. They correspond directly with the brokers in London?—Yes.

3123. Have

3132. Viscount Goderich.] Do you suppose these damaged goods find their way to the provincial wholesale houses, and are ultimately sold to the public as good drugs?—Of course; they are sold to the wholesale druggist, and through the medium of his connexion to the public.

3133. Do not you think that is a dishonest practice?—No doubt.

3134. Does a large amount of such goods get into circulation in the country?—I do not state that I can establish as a fact that there is any at all. I was asked my opinion as to what became of them.

3135. Is there a large amount of such goods introduced into the country annually?—Yes. Evidence has been given with regard to the Apothecaries' Company. It is not quite fairly given, because it is stated that the company buy their goods in the market. They do not buy their goods in the market; they buy them second hand of the wholesale druggists. It has been stated with regard to the Government supplies, that the Government might just with equal propriety go to Stultz, the tailor, and employ him to clothe the army, as to such persons to supply them with their drugs. They are just the same sort of market.

3136. Viscount Goderich.] Do not the Government buy their drugs of the best druggists?—Yes; of the best retail druggists second hand.

3137. Chairman.] Does any remedy suggest itself to your mind with respect to the importation of spurious drugs?—The remedy I would suggest to the Committee, would be a small duty upon some of the articles; the duties were first reduced in September 1833. It was a great boon to the trade, because the duties were totally out of proportion to the value of the articles, but in 1842, the duties were taken off generally, so as to take away the necessary protection; they were further reduced in 1845 and 1853.

3138. Viscount Goderich.] What do you mean by necessary protection?—If there is a certain duty upon an article it excludes a certain quality, which I am prepared to show you by the Custom-house bills of entry.

3139. By protection, do you mean protection to the seller or to the buyer?—To the article itself; if a certain duty has to be paid, it is not worth the while of the party to bring in inferior drugs in the first place; and in the second place the duty would prohibit their being cleared for home consumption. A duty that would take away from us our colonial trade and send it to Hamburg and other places, would be a bad thing for the general prosperity of the country, but such a duty as 2d. a pound upon jalap would prevent such an occurrence as I have to show you here; I thought it best to place the document before the Committee (*handing in the same*). If you will do me the favour to look at that, you will see the Eliza from Hamburg in November last, there are 55 serons of jalap stalks in the ship's manifest.

3140. Chairman.] What do you deduce from that fact?—Those stalks would be ground into powdered jalap, and not possess half the proper strength.

3141. Lord C. Hamilton.] Do you mean to impose an *ad valorem* duty?—No.

3142. Viscount Goderich.] You mean to say that the article you have alluded to is very inferior?—It is stalk instead of root.

3143. Which ought not to be introduced at all, in your opinion?—Yes; this, the next day, is entered for home consumption, not as jalap stalks, as it is in the ship's manifest, but as jalap. You will see there is the same ship and the same importer; it is the identical thing.

3144. Mr. Wise.] When you speak of protection, do you mean protection to the public?—The security would be, preventing the importation of inferior articles.

3145. Not in a trade sense, but in a social and moral sense?—In a trade sense; it would be injurious to impose such a duty as would drive our trade to Hamburg and other places.

3146. You are of opinion that an arrangement might be made at the Custom-house to prevent the importation of spurious drugs; that a small duty would prevent any increase of the national expenditure, and, at the same time, be a great protection to the public in securing pure drugs?—I think a very trifling duty of 2d., or at the outside, 3d., would have excluded those jalap stalks which came in for consumption, to the great injury of the fair trader.

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3147. Chairman.]

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3147. *Chairman.*] Would you not require a very great variety of duties suited to the different articles?—Only sufficient to prevent the importation of inferior drugs.

3148. Every article would require a separate duty, proportioned to its value in the pure state?—Clearly.

3149. That is the plan which you think would be most efficient?—I have no doubt it would exclude all those inferior things, and not only so, it would exclude damaged goods; if the same duty were levied on a damaged article it would not find its way here; it would be exported.

3150. Mr. *Moffatt.*] Does not the damage generally arise in the transit from the place of produce to this country?—Drugs are awkward things to deal with; they require a great deal of care. We have a great many country damaged goods come for sale.

3151. Lord C. *Hamilton.*] You think a small duty levied upon jalap would prevent the party sending jalap stalks from Hamburg?—Clearly.

3152. Surely the profit to be got by selling jalap stalks for jalap root, both articles paying the same duty, would still induce the parties to import jalap stalks?—You must distinguish between the merchant and the dealer; the merchant who brings in these stalks is not the person who sells them out to the retail dealers; they go first to the wholesale dealers.

3153. Mr. *Moffatt.*] What is to prevent the merchant importing his own stalks and selling them as jalap if he pleases?—Nothing.

3154. Then if the stalks paid the same duty, seeing that he could buy jalap stalks 50 per cent. under the price that he could buy jalap root, it does not appear that your plan would give any protection?—The persons who send the jalap stalks from Hamburg, knowing that they paid duty here, would, in all human probability, get a better market for the stalks in Hamburg than here, taking the difference of duty into consideration.

3155. Assuming a wholesale druggist knows that stalks are selling 50 per cent. under the price of jalap root, the duty being the same, would not the inducement remain to import jalap stalks if he could sell them afterwards as jalap root?—The inducement would be so much less in proportion to the amount of duty.

3156. Viscount *Goderich.*] Your plan would be to have the duty equal upon both articles?—Yes; that would be in favour of the best article.

3157. *Chairman.*] If he could sell the inferior article at the price of the best, would not there be an inducement, the duty being the same, to import the inferior article?—Yes.

3158. Mr. *Wise.*] That applies to tea and other articles, does not it?—Yes.

3159. Are you aware of the practice in France and other continental countries?—I am informed that a great many articles are excluded from France.

3160. Mr. *Moffatt.*] Does any system of inspection of drugs upon importation exist in France?—The importation of many articles is prohibited. I do not think there is any inspection as to quality.

3161. If you sent jalap into France, would not the French Government inquire whether it was pure or impure?—They would not admit it at all.

3162. Mr. *Wise.*] You are aware that the chemists and druggists of Paris are subject to constant supervision and inspection?—I believe they are.

3163. Mr. *Moffatt.*] You say the French authorities would not admit jalap, whether it was pure or impure?—Not from England.

3164. Lord C. *Hamilton.*] Under what regulation is that?—A great many things are prohibited. If you were in Paris and your lady required a little gum arabic, such as is sold by a respectable retail house in London, you could not get it in Paris on account of their colony in Senegal. There is nothing but inferior gum arabic to be had in Paris, the Senegal gum.

3165. Mr. *Wise.*] That is a protection for their own colonial produce?—Yes.

3166. *Chairman.*] Can you give the Committee any information as to the sale of patent medicines?—Yes.

3167. Do you think the sale of patent medicines is injurious to the public health?—It is highly injurious to the public health, because the most powerful drugs, and the most drastic purgatives, are in the hands of patent medicine dealers, who are unacquainted with their properties.

3168. You

3168. You think that is a state of things that ought to be remedied by law, if possible?—Yes.

3169. Have you any suggestions to offer to the Committee as to the mode in which that difficulty should be met?—I have had great experience in the patent medicine trade, and my notion is, that I should make the 1½d. stamp into 3d., and the 3d. stamp into 6d.; there would, of course, be a considerable increase of revenue, and I think it would tend to check the sale.

3170. Is not the effect of the stamp duty rather to give currency to patent medicines than otherwise; do not you think that the public are somewhat deceived by the belief that the stamp implies that there is Government sanction for the sale of the particular medicine as being useful for the purposes for which it is advertised?—If that is the case it must be amongst a very ignorant class of people indeed.

3171. Is not the ignorant class, generally speaking, the class which buy patent medicines most largely?—I think not.

3172. What advantage do you intend to derive from increasing the duty upon the sale of patent medicines?—To check the sale.

3173. If it be desirable to check the sale, is it not more desirable to prevent the sale if it is injurious to the public health?—Yes.

3174. Did it ever strike you that means might be devised for preventing the sale of patent medicines?—I have thought a great deal of it, but I can think of no plan by which the sale of patent medicines could be prevented entirely.

3175. Are you aware that the question is dealt with in France in a peculiar manner?—No; I know that a vast quantity of spurious English patent medicines are sold in Paris and France generally; I have a case before me now in which an application has been made to persons at Manchester who make Henry's magnesia, by a resident in France; he desires to have the agency from them, and to be allowed to use their labels; hundreds of grosses of Henry's magnesia are sold in Paris and France generally, not having come from Henry of Manchester at all.

3176. Are you aware that the Government in France require that the compounders of every secret medicine, as they call patent medicines, shall state to an authorised body the materials of which the patent medicine is composed?—I am perfectly aware that it is so.

3177. Do you believe that that is at all effectual in preventing the sale of dangerous medicines?—I do not think it is. I have seen advertised in France some very extraordinary things, to which are attributed very extraordinary properties.

3178. The result is that the Government must sanction the sale of dangerous medicines?—Of course it must be so.

3179. It does not strike you that any such step would be advisable in this country, does it?—By any step that is at all constitutional it would be very desirable to stop the sale of patent medicines, but to me it appears a matter of pounds, shillings, and pence.

3180. Lord C. *Hamilton.*] Do you believe there is greater injury done to the public health by the sale of patent medicines than by the use of spurious drugs?—I knew an eminent barrister who was killed by Morrison's pills.

3181. Have you never heard of persons being killed by prescriptions being ill made up by chemists?—Clearly. I heard a fatal case mentioned in this committee-room which occurred in Ireland.

3182. Do you believe the balance of injury is against patent medicines?—I do.

3183. You think it is dangerous to leave the use of those patent drugs in the hands of ignorant persons?—Yes.

3184. Do not you think it would be a useful thing to get rid of the Latin phraseology which attends chemistry, so as to make many more people acquainted with the nature of the things used?—I think it would be a good thing to simplify the nomenclature. I could give the same article half-a-dozen names; it is only dog-Latin, after all.

3185. You would give it up without any great struggle?—Yes; we have tried to simplify the nomenclature.

3186. Would not simplifying the phraseology in relation to medicines have more effect than any war against patent medicines?—I think it might have a good effect.

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3187. Mr.

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3187. Mr. Gregson.] You say you have tried to simplify the nomenclature; are your labels in English or Latin?—That depends upon whom we send the goods to; we label the goods in English frequently.

3188. Mr. Wise.] If I understand you correctly, you think all prescriptions should be written in the English language without any symbols?—It is scarcely a matter I can deal with; I am not very well acquainted with the retail business. It is a matter upon which a respectable retail chemist would be more competent to give evidence than I am; there may be reasons which I know nothing about; I never made up a prescription in my life.

3189. Are you aware that at a kind of sanitary congress which was held at Paris, it was strongly recommended to the nations of Europe generally, that all prescriptions should be written in the native language of the country?—No.

3190. You are aware that the Government of Spain have passed a law enacting that prescriptions shall all be written in the Spanish language?—No.

3191. Is there any distinction between what are called patent medicines and the quack medicines which are advertised in the newspapers?—The same terms apply to both; my opinion is that they should be all taxed with a duty; that any man claiming to himself any peculiar privilege, that is to say, if he says "No other is genuine," I would make him pay a stamp duty.

3192. Would it not be wiser to prohibit all those patent medicines?—It would be very difficult, there are so many interests concerned in it; the newspapers derive great advantage from the advertisements.

3193. Do the parties pay any large sums of money for those privileges?—No; only in the form of advertisements.

3194. If it be for the public advantage, would it not be desirable to prohibit the sale of quack medicines?—I see a great many practical difficulties in the way.

3195. Do not you think all possessors of these secret remedies who might be unwilling to make them public without remuneration, might be called upon to submit a copy of their prescription to a secret tribunal of physicians?—I do not think it would be necessary to have a secret tribunal; they might be placed under the same laws as a man who takes out a patent; if he does not specify his patent correctly, it will not hold good.

3196. Do not you think a tribunal of physicians might examine prescriptions, and certify whether they were for the good of humanity?—Yes; it would be a wholesome check upon the sale of medicines. When any man claims the exclusive privilege of stating that such and such a thing can be had only of him, and that all others are counterfeits, I would make him pay a stamp duty; it would tend to discountenance a great many things. Finding that an article called sarsaparilla was brought in largely from America, I thought it my duty to bring the matter before the Board of Customs. I got a bottle of this sarsaparilla, and drew off the spirit with which it is made, and without which it will not keep. I took a bottle of the spirit in my hand to the Customs. I said, "Here is a very great hardship upon us; we pay a heavy duty upon the spirit; this man is selling a decoction of sarsaparilla without paying duty upon the spirit. Further than that, I have examined it as well as it is possible to examine a vegetable matter, and I do not believe it sarsaparilla at all." They heard what I had got to say, and they said, "Well, you must not consider yourself aggrieved; he pays a heavy *ad valorem* duty upon its coming in, and a stamp duty here. You are perfectly right as to the quantity of spirit it contains. We know that the article is not sarsaparilla as well as you do, but people will have it; and therefore he is sufficiently taxed to prevent your complaint of his getting his spirit without paying duty, when you pay a heavy duty."

3197. Chairman.] There can be no doubt that injury to the public health arises from the sale of an article under the name of sarsaparilla which is not sarsaparilla?—Precisely. I do not believe it is sarsaparilla at all; it is an exceedingly difficult question. I should like to have seen brought more clearly before this Committee the matter of vegetable chemistry; it is a matter which scarcely anybody can deal with at all; we fancy that we are pretty good cooks, but we are in great ignorance as to the sources of our drugs. If we could have such a man as Mr. Fortune, and as well informed in drugs as he is in botany, to travel and get the statistics of drugs, it would be of very great use to us indeed.

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I was going to say, with regard to such an article as brown cod liver oil, in my opinion it is nothing but common cod oil; a man professing to sell it genuine should pay a stamp duty, and come under the patent medicine law.

3198. If he is allowed to sell it as a stamped article, would you not require that it should be what it purports to be?—If he is allowed the privilege of calling it what it is not, at all events he should pay for it.

3199. Would you permit him to pay for the privilege of selling an article under one name when it is a different thing?—The truth is, they are essentially the same; it is only the mode of preparation; the common cod oil is the same.

3200. It bears a difference, which chemists can detect?—No; the test is very uncertain indeed; the only test we have is to use a drop or two of sulphuric acid, and see what effect it has as to colour.

3201. That is a simple test, is it not?—It is not universal.

3202. Mr. Gregson.] Is the effect of the two species of oil nearly the same?—I cannot speak as to the effect.

Edward Divett, Esq., a Member of the House; Examined.

3203. YOU represent Exeter?—Yes.

3204. You have had your attention called, I believe, to the evidence which has been given before this Committee on the subject of adulteration generally, and there are one or two articles especially to which your attention has been directed, among others the article of tea?—Yes.

3205. Will you favour the Committee with any information you may possess as to the purity or adulteration of the article of tea?—Before Easter I saw a statement in the evidence given before the Committee in the "Times," which was so inconsistent with some facts which I received from a very good source, that I thought it my duty, when this Committee assembled again, to mention them to the Chairman. On that day the Honourable Member for Huddersfield was in the Chair, and the Noble Lord asked me whether I could get the gentleman who had given me this information to attend. I said I doubted whether I could do so; upon which he said, "Can you get the information and give it the Committee yourself?" I said I should be very happy to do so, if it was thought desirable to take second-hand, feeling as I did, a great interest in the subject generally; this is what induced me to come here to-day.

3206. To what portion of the Evidence was your attention specially directed?—The portion of Evidence I particularly allude to was that relating to the subject of lie tea; a witness having stated that there was no such thing as lie tea in the market; at all events, he went as far as this, that there was no lie tea now imported; I think he called it *pure* lie tea, meaning, in other words, tea that had no tea in it. A few days before, I had been with a gentleman, a very respectable tradesman, with whom I deal, and he showed me samples, nominally of tea, but which he said had not a particle of tea in them; and he, moreover, showed me the way in which this tea was tested: an infusion was made of it for a certain time; I think there is a bell that gives a ring as an exact measure of time for the infusion to the tester. It is likewise rubbed, to find what the material of it is; he unfolded some of the leaves; they were certainly not tea-leaves, anything else but tea-leaves. This, in connexion with the Evidence I had seen, struck me very much; and after the conversation I had with the noble Lord the other day, I went to this place again, to have these facts verified; and he then assured me he believed it was perfectly true that a great quantity of lie tea, in the state of lie tea, was imported now, with a vast quantity imported in a mixed state; he said that formerly, after the abrogation of the East India Company's Charter, there was a good deal of lie tea imported, and that a good deal of noise had been made about it; but that now the adulteration took place in Canton, and came over here into the market. He then showed me some samples of this tea, and he mentioned some of the ways in which the tea had been adulterated. He spoke of the adulterations some time ago that took place here, but which, he said, he did not think were done so now. He mentioned the fact of having sold some tea,

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some years ago, to a house in the North, which was called "scented caper;" and this "scented caper," it was then the practice to turn it into what was called pearl-leafed gunpowder; he said this species of manufacture was, some time ago, carried on in Manchester and some other towns; and that the ingredients employed to do this were magnesia, turmeric, and gypsum; he mentioned one particular instance that had occurred to himself, of a case in which he sold to a house in the North a parcel of scented caper; shortly afterwards, this scented caper tea was sent to him, to ask his opinion of its value and its quality, under the name of pearl-leafed gunpowder; he tested this tea, and gave a good opinion upon it, upon which the firm to whom he sold it wrote to tell him that he did not know his old friend with its new face.

3207. Mr. Moffatt.] What is the inference to be drawn from that?—They meant by that, that this tea-taster was deceived in this tea, which he believed to be tea, as tea would come from China; he was not at all aware that it had come in one shape from China, and been converted into another shape by the ingenuity of some manufacturers in the North.

3208. How was it an old friend with a new face?—It was an old friend of his, inasmuch as he sold it in one shape to the people in the North, and it came back to him for his opinion in a totally different form. What had been called scented caper was turned into pearl-leafed gunpowder.

3209. What year did that occur in?—This was some years ago. The same gentleman stated to me that he did not believe this was done now. His belief went to this, that though there was a great deal of this spurious tea in the market, he did not think it was manufactured here, but came from China.

3210. Chairman.] Have you any experience of your own upon the subject?—None whatever. I always took very great interest in favour of the abrogation of the East India Company's Charter and the opening of the trade with China, in some degree in consequence of being intimate with Mr. Crawford, who was the agent of the merchants of Calcutta at that time. I believe I read everything that could be found upon the subject of the trade in tea, and its production; my only interest subsequently has been from taking great pains, as I am fond of tea, to get the best tea.

3211. Do you find a great difficulty in getting good tea?—No difficulty from a respectable house. I believe the adulteration by small dealers is very great, and the mixture above all. I fancy all tea requires more or less to be mixed to suit particular tastes; but it is the mixture of one tea with another; scented tea with unscented tea.

3212. Do you know of the mixture of tea with other ingredients which are not tea?—The only mixture I can speak of is what they call, I think, pekoe-flavoured souchong, which I like myself; I like a tea with a certain degree of flavour and scent. If you wish to know the nature of the adulterations, I can tell you what this gentleman informed me were some of those in the tea that came from China.

3213. Was this a country dealer?—A London dealer; he showed me many specimens recently imported.

3214. I suppose there is some difficulty in inducing him to give his evidence?—He would not give his evidence; he has given me some of the samples that were in the market yesterday.

3215. Mr. Moffatt.] What tea can you show samples of?—I have not opened the samples; the tea was in the market yesterday.

3216. Of your own positive knowledge, can you give any information to this Committee?—Yes.

3217. What can you state from your own positive knowledge?—I saw those teas tested the other day, and I saw distinctly, in one or two, a great deal of silk-worms' dung.

3218. Those teas you can purchase in the market at the present time?—Yes.

3219. When were they imported?—I cannot tell when they were imported.

3220. Were they imported five years ago, or two-years ago?—I cannot tell; I could get that information.

3221. Is that tea saleable in the market at any price?—I am told it is saleable at a price.

3222. At what price can you buy it?—I did not buy it.

3223. If

3223. If you were to offer 2 *d.* a pound for that tea, you would get it, would you not?—I know nothing about the price, but I am assured that this spurious tea is often a subject of speculation.

3224. Assuming you are able to buy that tea at 2 *d.*, the inference would be, that dealers in tea will not buy the tea?—I am assured there is a market somewhere in England for any rubbish whatever; and that some of this tea which is adulterated, which, to anybody who knows anything about tea, is excessively disagreeable, finds a market in the gin-drinking portions of the metropolis, and is even liked, inasmuch as the dirt in it gives an appearance of strength.

3225. What is the peculiar flavour of that tea which you have analysed?—I did not taste it, but I saw it.

3226. Mr. Wisc.] It was very like gunpowder tea?—It was made to represent something of that sort.

3227. Mr. Moffatt.] Can you state what quantity of this tea has been imported in the present year?—I have no doubt my honourable friend, who has great knowledge of the trade, can get accurate information upon the subject, because he is perfectly well aware that in all places where tea is sold on a great scale, parties who sell that tea have rooms surrounded with boxes, on which are the marks of the tea, and the names of the ships it comes in; he could find people himself competent to test those samples which I am about to place before the Committee.

3228. Evidence has been given before this Committee that the importation of lie tea has practically ceased, and the information you give to the Committee is, that it has not practically ceased. The Committee are anxious to know your grounds for that information. Can you state when the last importation of lie tea occurred, and whether any of those samples you produce before the Committee are of recent importation?—I believe those samples are of recent importation; if my Honourable Friend wishes that to be ascertained, I can do so.

3229. Do you know what ship they were imported in?—No, I do not; but I can get that information.

3230. Mr. Peacocke.] They are still sold?—Yes.

3231. The gunpounder tea goes off?—Yes, it pleases the stomachs of the customers; it does go off, to a certain extent, probably in gin-drinking neighbourhoods.

3232. Mr. Gregson.] What quantity was in the market?—I cannot tell you that. I can get that information. I have seen a range of those boxes.

3233. Mr. Moffatt.] Containing this lie tea?—Many of them containing lie tea.

3234. Is it from a broker or dealer you get this information?—From a dealer.

3235. A wholesale dealer in London?—Yes.

3236. Who has an extensive arrangement of boxes containing samples of this lie tea?—He has samples of every tea that appears in the market; he, I suppose, gets a sample to see what it is; of course he naturally tests it, to protect the stomachs of his customers if he can.

3237. And does your informant fear to give this information before the Committee?—He declined to give information before the Committee. I endeavoured to persuade him to come here, and it is only in consequence of his declining to do so that the conversation took place between my noble friend and myself; he thought it might be useful that this information should be given, because it was perfectly clear that evidence given here was, at all events, incorrect, to a great extent, with regard to lie tea.

3238. It appears from what you have stated, that you have found in the market certain quantities of lie tea or spurious tea, though you are unable to tell the Committee whether that had been recently imported, whether an extensive trade is going on in that, and whether the importations have increased or decreased the last few years, or whether it has practically ceased or is still going on?—The importation of lie tea of bad character has, I am assured, greatly diminished of late years, but the importations of lie tea mixed with other tea, and manufactured tea of a spurious character, are still very large.

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3239. In what proportion does it require that the mixture should be of lie tea with other tea to make it lie tea of a good character?—I am not sufficiently conversant with the mysteries of the trade to answer that.

3240. Will you state to the Committee what you intended to convey when you stated that lie tea of good character was imported?—In speaking of the distinction between the different sorts of lie tea, I meant what my honourable friend means by lie tea of a good character, lie tea that has no tea in it; not even perhaps the sweepings of the manufactory where it is made; that has been sometimes imported; but this lie tea (*producing a sample*) is about half and half; No. 1 is a sample of gunpowder tea (*handing in the same*).

3241. What ship was this tea imported in; are you quite sure it was not made in this country?—I believe it was made in China.

3242. Are you quite sure your informant has not made that tea himself?—Quite certain; I believe my informant is very honest.

3243. Where did he buy it?—I cannot tell.

3244. You know nothing more about it than this, that some person who will not allow you to use his name gave you that sample of tea?—One sample of tea was in the market yesterday.

3245. What was the price asked?—You can ascertain the price, I have no doubt.

3246. Mr. *Swift*.] Was it in the hands of a broker or a dealer?—I cannot tell; I know it was in the market yesterday.

3247. Mr. *Moffatt*.] What do you mean by being in the market?—In the market this day. When I was with this gentleman, on Monday I think it was, I said, "It is quite clear that those samples you have procured from certain parcels of tea are adulterated?" can you send me, this evening, some samples of tea which are for sale at this moment which are fresh, and as far as you know recently imported?" he said, "I can; I will send them to you this evening;" and those are the samples he sent; one is a sample of gunpowder offered in the market.

3248. There is no statement of the ship or importation?—No.

3249. Are you aware, as you have made large inquiries in the tea trade, that it is always usual, when offering samples of tea, to state the importation; the ship in which the goods are imported?—I was not aware of that; but had I been aware that the Honourable Member would ask me that question, I would have taken care to be prepared; he should have had chapter and verse; he should have learned where it was offered for sale.

3250. It is very essential to the value of the evidence that these particulars should be given?—I dare say, if it is considered important by the Committee, the information could be obtained; my motive in tendering my evidence was merely to secure that the Committee should not be misled by any one-sided view of the question; I beg leave to put in these samples (*the same were handed in*). No. 2 is likewise gunpowder tea, about half of which is lie tea; No. 3 is scented caper, half of which is lie tea; and No. 4 is scented caper, half of which is lie tea.

3251. Mr. *Gregson*.] Were these selected from any large parcels?—I am assured that they were.

3252. Mr. *Wise*.] They were offered for sale yesterday, coming direct from China?—They were offered for sale direct from China. I cannot give the ship. I saw one specimen, with which you could make a mark on paper almost like the mark of lead pencil.

3253. Mr. *Moffatt*.] Of your own positive knowledge with regard to tea, you can state nothing except that those samples have been sent to you?—Precisely. There was a point mentioned by the last witness upon which, with the permission of the Committee, I would say two or three words, relating to the question of Customs duties. My own belief is, that there is a good deal in what the witness stated upon that subject. I always thought myself it was a mistake getting rid of all customs duties upon certain articles. The extravagant rate of those duties naturally produced a feeling in favour of getting rid of them, but in getting rid of that heavy duty I confess I have great doubts of the expediency of getting rid of the duty altogether. I think that the subject raised upon that question, with reference to inspection by Custom-house officers, where there is an establishment ready to do it, is a subject well worth consideration.

3254. *Chairman*.]

3254. *Chairman*.] You are aware the question was only raised, not in the sense of financial advantage to the country, but for the purpose of putting a stop to the importation of adulterated drugs?—Where you can have a small duty which will prevent unwholesome or spurious articles being introduced, I think that small duty should be imposed.

Mr. *Julian Rodgers*, called in; and Examined.

3255. *Chairman*.] YOU are an Analytical Chemist, residing in St. George's Road, Pimlico?—Yes, and a Surgeon.

3256. Your attention has been called, in the exercise of your profession, to the subject of adulteration, not only with regard to drugs which come under your immediate inspection, but also with regard to articles of food?—Very generally indeed.

3257. Will you state to the Committee the principal articles of food you have yourself examined, and the result of your examination?—I have for a long time been engaged in the examination of bread and beer; and I am convinced, from my own experience, that an enormous amount of suffering is the result of adulterations in those substances. I will speak first of bread: since I received the order to attend this Committee I have obtained a large number of samples of bread; some of the lowest description, such as is used at workhouses, and upwards towards that which I have reason to believe is used by Her Majesty herself, and in all those samples I have detected alum. This evidence, I believe, is at variance with the opinion of some chemists; but there are certain precautions necessary in the detection of the alum; the ingredient used for its detection will actually dissolve a portion of alumina if in excess; unless there is the precaution of boiling it away you get no indication of alumina; with proper precautions, I should say the quantity of alum generally used varies from eight ounces, to a batch of 116 loaves, to two pounds.

3258. Do you consider the small quantity you have named is injurious?—Yes, even the smallest amount of alum; each two ounces of bread would contain a grain of alum, consequently if a person eat a pound of bread in a day he would eat eight grains of alum at the lowest.

3259. Do you think eight grains of alum injurious to health?—Very. I have found great gastric irritation of various kinds pervading a whole family. I have known that they used the same water that I used; I have known in many other articles of food they used the same, the difference being only in the bread; and I have found, upon the discontinuance of the bread they have been in the habit of using, all those troubles have ceased. I was unable, medically, to do more than to palliate their sufferings, until they used bread containing much less alum.

3260. You consider the daily use of bread containing even a small portion of alum is injurious?—Yes.

3261. Mr. *Peacocke*.] What were the maladies with which this family, to which you have referred, was afflicted?—Pain, after eating, a great deal of flatulence, constipation, and there was a quantity of air generated in the stomach, besides ordinary dyspeptic symptoms.

3262. Mr. *Wise*.] Are not young children especially liable to suffer from alum in bread?—Yes.

3263. *Chairman*.] You found when a different bread was used that your patients gradually improved in health?—Yes; some bakers do not put in alum; they have the best quality of flour from the millers, which enables them, as they imagine, to do without the use of alum.

3264. Is alum the principal adulteration of bread, according to your experience?—Yes; and the most injurious in itself, and it enables bakers to use a very inferior flour, so that when their loaves are made in a batch they will separate nicely, and give it that cohesion necessary for them to sell their bread.

3265. Is there not another object in mixing alum with bread, namely, that it contributes to its weight; will not the bread hold a greater quantity of water?—That has been stated, but the quantity would be very minute; I think that is an error; it is contrary to my own experience, and the experience of bakers, their object being to whiten it slightly, and to use a minute proportion, to allow

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allow of the separation of the loaves. Undoubtedly it occurs that bakers who are undersellers use it to enable them to sell an inferior character of bread.

3266. Mr. *Wise*.] Has not rice the effect of making bread heavy?—Yes, because it will take up a great deal of water.

3267. Is rice flour largely used in the metropolis for mixing with wheaten flour?—Yes, I believe it is; that is only injurious in containing less nourishment.

3268. You are aware there is a law still in existence relating to the metropolitan district, which is 10 miles round the Royal Exchange, which enacts that all bread not made of wheaten flour shall have a Roman M marked upon it?—I have heard that that is the law.

3269. How is it that that law is never enforced, or attempted to be enforced?—I am not aware.

3270. Are you aware that although bakers mix barley and bean meal with their bread, still it is illegal to sell such bread?—I have been made aware of that since the investigations took place in this Committee-room.

3271. How do you account for the great apathy of the people with respect to prosecuting cases of that kind?—The trouble of conducting such investigations; they think it is not their business.

3272. Are you of opinion that some public inspector with regard to bread should be appointed?—Yes.

3273. Would you apply the same law to bakers in London as is applied to the bakers of Paris by public inspection?—I would have public inspection and general inspection; and I am sure that the very general disease you have, in the nature of irritation about the stomach, is to be traced to the bread that is used.

3274. Can you suggest any municipal arrangement which would tend to stop those serious impostures?—I would have an officer appointed by Government, or the local Boards of Health, to take samples, which samples should be analysed by a set of gentlemen appointed by Government for the purpose of analysing all the things brought before them. I would do it in this way: I would have a laboratory fitted up to carry out every possible investigation of this kind as regards poisons, as regards adulteration of drugs with analytical chemists, and botanists appointed in that department; that each health officer should be ordered to send up to the secretary of the Commissioners appointed samples of all adulterated things or injurious things to be sent to those laboratories for analysis, and the result of that analysis to be referred to the Commission, and I would have a sentence, say, a fine imposed. But I consider the greatest prevention would be this: in every case of conviction that the Commissions should order, a policeman to put a notice of such conviction in the window of the person so convicted; and I think the expenses that might be attendant on carrying out a measure of this kind, could readily be defrayed by making each tradesman pay a small licence fee yearly of a few shillings, to enable him to keep his shop, which licence should enable him also, on purchasing of the wholesale dealers, to send a specimen of anything he may suspect not to be genuine to this Board to be analysed.

3275. Mr. *Moffatt*.] Are you aware that any offender who has been found guilty of adulteration of bread in any shape whatever is liable not only to be fined, but to have his name and place of abode published in the local newspapers?—Very few would look at those portions of the newspapers; but those who frequented the shop, and whom he injured by selling those adulterated articles, would know it by seeing he was not to be trusted, seeing a notice in his own window.

3276. Your opinion is that the present law is totally inoperative and ineffective?—Yes.

3277. Mr. *Peacocke*.] Having examined bread bought in poor and rich districts, did you find much difference in the adulteration?—Yes; I found the cheap bread contained a larger amount of alum.

3278. Generally, in other articles, did you find much adulteration?—I have confined myself to those I have, in the treatment of my own patients, found injurious.

3279. Mr. *Swift*.] Speaking of the various qualities of bread, you draw your comparison from the highest and the lowest, that used by Her Majesty and that used in workhouses; are the Committee to understand that those gentlemen

men who are called the Guardians of the Poor are in the habit of contracting for such bread as is dangerous to the health of the paupers under their charge?—I would not have it understood that they are purchasing bread knowing it to be injurious; what I would convey is, that bread, no matter what price is given for it, is adulterated with alum. I might remark, that the quantity I found in one workhouse, St. George's, Hanover-square, was not greater than I found in bread consumed by persons, my own patients, in a good rank of life.

3280. Mr. *Kinnaird*.] What workhouses do you allude to?—Kensington and St. George's. I have repeatedly examined bread through a period of perhaps 16 or 18 years; but on receiving the order to attend this Committee, I thought I would just have a few specimens, so as to speak to the subject up to the present day.

3281. Have you found that the adulteration varied with the price of wheat, or whatever the price of wheat have you found the adulteration much the same?—Much the same.

3282. You do not think it is owing to any pressure or wish to remedy a deficiency for the purpose of gain?—For the purpose of selling bread made of an inferior character of flour, appearing to be good when it is not.

3283. Lord C. *Hamilton*.] In what form did you find the alum in the bread?—As alum, sulphate of alumina and potash.

3284. In a crystalline form?—No; perfectly diffused throughout.

3285. This Committee have before them the evidence of one witness who seemed to think there was a decided advantage in this; what is your opinion; does the presence of alum counteract any bad effects that exist in wheaten flour?—I should think not.

3286. Does it supply any nutriment, or any other quality which is wanting in wheaten flour?—I might add to my first answer, that it might prevent mould; the bread would turn and get mouldy more rapidly without alum than with it. With regard to the second question, as to its affording any advantageous thing to the system, I am clearly of opinion, from my own experience, it does an immense amount of injury, and can be beneficial only in such cases as those in which alum may be prescribed by medical men.

3287. One witness described that it made the bread lighter, and made it eat shorter?—It would not.

3288. Your opinion is, that in no case, except in preventing the presence of mould, is the use of alum in bread advantageous?—Yes.

3289. Medically it is prejudicial?—Yes.

3290. Mr. *Wise*.] Can you suggest any simple easy mode by which the great mass of the people can test their bread?—I do not think there is an easy way for them to do so.

3291. Mr. *Kinnaird*.] What steps did you take to test the alum, when it was, as you say, not in a crystalline form, but thoroughly mixed with the flour?—Ordinarily soaking the bread in pure distilled water for a few hours, and gently pressing the bread, and filtering the liquid coming from it, and testing the filtrate; that is, the liquid that comes from it; the alum being soluble, and the majority of the ingredients of bread being insoluble, you can so test it.

3292. Mr. *Peacocke*.] How do you test the water?—By adding ammonia to it, which will throw down the alumina, and then afterwards testing that precipitate, to see that it possesses the proper properties of the alumina, so as to avoid all source of error.

3293. Mr. *Wise*.] By dropping a few drops of liquid ammonia into the solution?—Yes.

3294. Mr. *Kinnaird*.] What is the greatest amount of alum you have found in one quartern loaf?—I have never subjected it to that kind of analysis; it has been too evident a fact, where alum was present in the cases in which I have found such difficulty of treatment, which led me to suspect some article of diet was the cause of it.

3295. Have bakers a regular stated quantity which they use, or does it vary?—They have a stated quantity. Bakers of the first class use a very minute quantity; six or eight ounces to a batch.

3296. Mr. *Moffatt*.] What quantity of flour?—What they term a batch, 116 loaves.

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3297. Mr. Peacocke.] Would that test you have given be a tolerably easy test for any person to apply?—The poor could not afford to have a stoppered bottle; moreover it would be dangerous; it would be a poison; any child getting hold of the bottle might in tasting be really killed from its action; the ammonia that would be used is in fact a poison.

3298. Mr. Wise.] Any person taking proper precautions might apply the test successfully, and prove that alum is in bread, just as applying liquor ammoniac to turmeric turns it a dark red?—Yes.

3299. Mr. Gregson.] Is a filter necessary to performing the experiment?—It is best to do so; you have small particles floating about in the fluid that you have strained off the bread, and you might imagine that those particles were the alumina.

3300. The expense of a filter would increase the difficulty of making the experiment, would it not?—A piece of blotting paper could be placed in a funnel and the liquor poured through.

3301. Mr. Moffatt.] What is the profit arising to the baker in putting this quantity of alum into the bread?—If he did not put this small quantity of alum in, the loaves, on being parted one from the other, one portion would stick to another; it is possible the half of one loaf might be sticking to the opposite half of another; he would not have his bread in a saleable form, so that the advantage to him is to prevent injury to his loaves.

3302. He gets no advantage, save that his bread divides more readily, and it has a whiter appearance?—Yes.

3303. Chairman.] Do not you consider he gets a great advantage if he is able to sell inferior bread as better; the Committee understood you to state that there is an improvement in the appearance of flour by the use of alum, and therefore flour of an inferior quality has the appearance of being a superior article?—Precisely. I understood the question to refer to the best kinds of flour.

3304. You were asked what advantage, in the way of profit, the baker derives from the admixture of alum with his bread?—First, the separation of his loaves, and secondly, that the inferior flour would never get into shape unless alum was present.

3305. Mr. Moffatt.] Does the superior kind of flour require the use of alum?—I have been informed by excellent practical bakers that it does not; if you have the best flour to work with, and mix a small quantity of old flour with it, then the old flour gives the same disposition to separate that the alum does.

3306. Mr. Wise.] In fact, a baker may use wheat costing 56 s. a quarter with alum, instead of 70 s. wheat without alum?—Precisely.

3307. Mr. Moffatt.] Have you ever found bread adulterated with any other ingredient but alum?—No, except potatoes.

3308. You say the minimum of alum is eight grains in a 4 lb. loaf?—Yes.

3309. Eight grains of alum on delicate persons will have a pernicious effect, in your opinion?—Yes.

3310. Would you propose to prevent the use of alum by some stringent provisions?—Yes; I am satisfied that respectable bakers would be very glad indeed. I have had repeated conversations with men standing high for respectability as bakers, and they have one and all told me they wish it was put a stop to.

3311. I think you said you never found crystals of alum in bread; you believe, as a chemist, there could be crystals of alum remaining in bread after it was properly baked?—It depends not upon the baking, but the way the alum has been introduced. If the alum has been mixed with water and dissolved by boiling, you would never have any crystals. If they just diffuse the powdered alum through the flour that they make into bread, they would get crystals.

3312. You do not believe the heat to which bread is exposed in baking would cause alum to lose its liquid form and become crystalline?—Certainly not.

3313. Lord C. Hamilton.] Do you imagine the practice of mixing alum in a powdered state with flour is very prevalent with dealers in flour, or that the main adulteration is practised by the bakers?—I think it is prevalent with the millers; I would mention this fact; I know a baker, who I am satisfied never puts any alum in his bread, and yet I have detected alum in it; I know he has never put it in.

3314. You stated there was a respectable baker, with whom you conversed, who told you how glad he should be if the practice could be stopped; did he offer

offer any suggestion as to how you could prevent the dealers in flour imposing upon the bakers as they do?—At the time of this conversation I was not aware of the presence of alum in some of the breads I have examined.

3315. Mr. Swift.] The absence of alum in the second quality bread would cause the bread to be much darker?—It would, unquestionably.

3316. Mr. Wise.] With regard to the means of detecting the presence of alum in bread, do you know whether by soaking a little bread in water, and by adding to the liquid so taken the white of an egg, when these are mixed together the alum would not turn opaque; have you had your attention turned to that simple test?—I do not think it would; the quantity would be too small to make the liquid opaque; and besides, there is a little opacity produced in mixing the white of egg with water. I have repeatedly done this for the purpose of showing my pupils the way of mixing egg with water in antidotes in certain poisons. It may be sometimes from some of the constituents of the water, and that would be liable to be confused with the effect of alum.

3317. Supposing there were a large quantity of alum, would that effect be produced?—It would.

3318. Chairman.] I believe you have examined beer also, to see if it was pure?—I have for many years turned my attention to the effect of beer upon human beings, if I may say so, after the manner Dr. Marshall Hall has proposed with dogs, as a test of strychnine; and, I myself, on finding certain beers possessed characters not possessed by malt and hops, entered into conversation with the consumers, and thus I know there is a large amount of beer sold by publicans, which seems exceedingly weak at the time, but which after a time will produce an intoxicating effect, but is not productive of any additional strength in their bodies. On the contrary, they will feel weak; that I apprehend is the case with a very large amount of beer consumed in London, and I have no doubt that is owing to the presence of *cocculus indicus*. On receiving the order to attend this Committee, I purchased several specimens of beer; but the necessary experiments for the detection of *cocculus indicus* in beer are so laborious, that I have not up to this time quite finished them, but I have not the least doubt, from the effects ascertained by the beers I have purchased, that those beers are adulterated with *cocculus indicus*.

3319. You know the effect of *cocculus indicus* upon the human system?—Yes.

3320. This beer which you say is not strong to the taste, nevertheless produces the appearance of intoxication, and its effects are analogous to those of *cocculus indicus*?—Yes.

3321. You cannot trace them to any other cause?—No.

3322. Mr. Gregson.] What are the effects of *cocculus indicus* upon the human system?—The destruction of the pointedness of the ideas of a person, headache and oppression, and an indisposition to all muscular action.

3323. Chairman.] When you use the term beer, do you mean porter?—Porter, stout, and some of the ales.

3324. You think they are liable to adulteration?—Yes.

3325. Do you know any use for *cocculus indicus* medically?—It is applied to no use; it is a substance which ought not to be imported into this country.

3326. Do you know of any use for *cocculus indicus* in commerce?—None whatever.

3327. Mr. Moffatt.] Is there any large quantity of it imported?—There is a large quantity, according to the statements of brewers and other men.

3328. Have they used it of late years?—I do not know.

3329. Mr. Kinnaird.] You maintain that *cocculus indicus* is simply used for the purpose of adulteration?—Yes; it comes into the market, and it disappears, and no one knows what has become of it. I mentioned the subject to the steward of a nobleman, and he assured me that he was aware of a small brewery in the country where he could always get *cocculus indicus* if he wanted to poison a few fish.

3330. Mr. Gregson.] It is imported openly, and sold openly?—Yes, it is prepared by the druggists for the brewers and the publicans; it is, generally speaking, acted upon by water, to extract all the active principle, to destroy the appearance of the berry, and the extract is sold.

3331. Is it bought by the brewers' druggists?—It can be obtained from the brewers' druggists, under the name of multum.

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3332. What are brewers' druggists?—The persons who sell various drugs to brewers.

3333. And you think they sell drugs which are prohibited by law from being used?—Yes.

3334. Lord C. Hamilton.] They said that they had given up the practice, and did not call themselves brewers' druggists?—They may call themselves something else.

3335. Chairman.] Does such a class exist now?—I do not know.

3336. Mr. Kinnaird.] Have they any other name but multum?—I think another name is hard mixture.

3337. Is there any other article carrying a name of that sort?—Not sold under that name; they have other extracts. Perhaps I might mention that a person told me, and I have every reason to believe in his honesty, that, he being a builder, had built a public-house, and had it licensed in his own name, so that he might afterwards sell the business, he having resided there for a time, and therefore would make more money. He had no intention of being a publican, and therefore he had no hesitation in saying things to me that another would not. He assured me that he had persons visiting him and offering for small sums to show him how he could make three barrels of beer out of two, and such that his customers would like.

3338. Mr. Peacocke.] Is there any test by which you can detect the presence of cocculus indicus in beer?—Yes, it is most troublesome, but at the same time it is most conclusive. The form of the crystal of cocculus indicus is very conclusive as to its presence. The plan of proceeding is to separate everything from the beer but this alkaloid of cocculus indicus. This picROTOXINE bears the same relation to cocculus indicus that quinine does to bark; it is in a very definite form, and after getting it into such a form, you could get it to a liquid condition, and subject it to microscopic examination. It is known that beer ought not to contain anything that will give a crystal, anything like the form of that which is found in beer containing cocculus indicus. I might remark that Mr. Herapath, of Bristol, has repeatedly done it. The investigation is a laborious one, and occupies a great deal of time; and therefore, unless there is some definite object in view, it is rarely done.

3339. From the analytical examinations you have made, have you found the presence of cocculus indicus in malt liquor?—Physiologically, I have. I have no doubt in a few days I could have produced microscopical proof from the specimens I have commenced examining.

3340. Do you know of any other test except the one you have mentioned?—I believe those are the most delicate tests.

3341. Mr. Wise.] You throw out all the gum and colouring matter?—Yes.

3342. Mr. Kinnaird.] Did you gather from the publican you referred to, that adulteration was chiefly taking place by the publicans or by the brewers?—More the publicans.

3343. Then those persons who are called brewers' druggists ought to be called publicans' druggists?—The small brewers' druggists and publicans' druggists.

3344. Mr. Wise.] Have you ever heard any insinuation of adulteration on the part of the great London brewers?—Never.

3345. Mr. Peacocke.] Have you tested their malt liquor?—Yes, I have physiologically; and where it has come direct from the brewery I never found any bad effects from it.

3346. Have you subjected it to the test of scientific examination?—No.

3347. Mr. Wise.] You say cocculus indicus is never applied to any useful purpose?—No.

3348. Do you see any use for it at all?—No.

3349. Might it not be strictly prohibited?—Yes.

3350. Mr. Moffatt.] Is it always imported as cocculus indicus in the berry?—Yes.

3351. If the importation of cocculus indicus was prohibited, might not it be imported under some other name?—It might in the way of extract.

3352. Mr. Gregson.] Do you know several shops were cocculus indicus or multum, as it is called, can be bought?—The cocculus indicus is to be bought at any druggist's.

3353. Mr.

3353. Mr. Moffatt.] Is it not publicly sold in the wholesale drug market?—Yes.

3354. Mr. Swift.] You say that you can obtain it at any retail druggist's?—Yes.

3355. If it is only used for the adulteration of beer, and the publicans have recourse to brewers' druggists, why is it kept by ordinary druggists?—I do not know that they do keep it; I have purchased it of them.

3356. Mr. Gregson.] Have you asked for cocculus indicus, or multum?—Cocculus indicus.

3357. Mr. Wise.] Cocculus indicus comes from the Levant, does not it?—I do not know.

3358. Mr. Peacocke.] Is it ever used for dye?—No.

3359. Chairman.] I believe you wish to give some evidence on the subject of poisons; will you state to the Committee your views?—A large amount of poisoning could be prevented by the restriction of the sale of poisons, and, as has been already stated in this Committee, by not allowing any poison to be sold unless the person purchasing is attended by some one known to the vendor of the poison, and also by always mixing the poison with some colour that should give evidence of what it is. But there is a class of poisoning which you would not prevent, that is what I would term poisoning by an educated person. There is a large amount of poisons that could be purchased in a harmless form; there is a substance you might purchase tons of, and take ounces of, without its being injurious; yet, by the simple process of heating it to redness, it would enable you to form prussic acid in very large quantities; it is now the ordinary substance used for the preparation of all the prussic acid that is prescribed, that substance and sulphuric acid being all that is used; you may convert starch into oxalic acid by very simple means; and with regard to arsenic, you might prevent its being sold by those who keep it in minute quantities; you might have difficulties in purchasing an ounce or a pound, but no difficulty in purchasing a ton of it.

3360. You would not allow the purchase of the essential oil of almonds?—No, except as an essence, which is a solution of the oil in spirits of wine. The great prevention of poisoning would, in my opinion, be the insuring the certainty of detection; that can only be done by appointing persons in various districts, for the purpose of making all the analyses that may be required in cases of poisoning, and that some person should be appointed to make a post-mortem examination when necessary. When medical men are called to a case of poisoning they find that they cannot make the analyses, because they lose money by having to employ some one else to do it, and they will frequently slur over the investigation rather than lose money.

3361. Mr. Kinnaird.] Have you reason to believe, from your experience, that the poisoning of human beings is far more common than is supposed?—I think so.

3362. Have you studied the question?—I have studied the question, and marked it very closely.

3363. What poisons do you believe to be most commonly used?—I believe the most common poisons would be nux vomica and arsenic. I believe that those poisons are used more than persons would imagine. Perhaps I may be allowed just to make one observation upon the present law with regard to the investigation of poisoning at inquests. If a medical man is called to a person, and he finds he is just dying, and afterwards it is necessary upon the inquest to perform an investigation, he gets a guinea for his evidence and one for the post-mortem examination; if perchance it is a case involving a charge of murder, he is forced, if he is capable of doing it himself, to devote six or seven days to the requisite analysis, which is frequently necessary, he gets no more; and if he has to employ any one else, he gets less; and that operates very badly in the detection of poison.

3364. Mr. Wise.] Do not you think it would be a great check upon the sale of poisons if, in the first place, all chemists and druggists were licensed; and secondly, that all persons applying for poisons should have the application backed by some medical authority?—I think it would confer more protection that no person should sell any poison to another without that individual is accompanied by some one personally known to the druggist; that can always be done where there is no criminal purpose intended.

3365. Would not an order from a medical man answer the same purpose?—He



Mr. J. Rodgers. He must go to a druggist to whom the medical man is known, and then it would amount to the same thing.

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3366. If the quantity required were above what is called prudent practice, then the certificate of the surgeon and of the medical man, whoever he was, would be a guarantee that the article should be supplied?—It would.

3367. Your opinion is that some decided check upon the sale of poisons is called for?—Yes.

3368. Mr. Peacocke.] Do you mean with a view of preventing suicide?—No; secret poisoning.

Mr. Edwin Wickham, called in; and Examined.

Mr. E. Wickham. 3369. *Chairman.*] I BELIEVE you are or have been engaged in the brewing business?—Yes, I have.

3370. Are you so still?—No, not at present.

3371. You have had experience, I suppose, in some considerable brewery, as to the practice in brewing beers?—Yes.

3372. Will you state to the Committee what that experience leads you to believe is the practice of those establishments?—From my experience in brewing, I believe that the great adulteration of beer takes place in the cellars of the publicans, and not in the breweries, although I know it is done by some brewers.

3373. Mr. Gregson.] Is your experience in London?—In the country, and also in London.

3374. Did you ever know an extensive brewer in London who was guilty of adulteration?—No, not from my own experience; I can only form an opinion by the taste of the beer.

3375. Generally speaking, your evidence goes to this, that the brewers are not adulterators of beer?—They are not, in my opinion; where adulteration takes place, it is generally in the publicans' cellars.

3376. Do you believe that the adulteration of beer is a common thing?—Very common; so much so, that the exception is those who do not adulterate; and I believe those exceptions are very few.

3377. Have you any means of ascertaining of what the adulteration consists?—I know what the usual adulteration is; the proportions generally used are, "To one barrel of porter eight gallons of water, six pounds of sugar, one pound of gelatine (or patent size will do), a handful of common salt, extract of gentian or quassia to restore it to the original bitter flavour, sulphate of ammonia to bring it back to its colour, half an ounce of sulphate of iron, and if required to taste oldish, an ounce of roach alum."

3378. What is your authority for that prescription?—I have known it to be used.

3379. Mr. Moffatt.] Do you know that it is generally used?—I have known it to be used in many instances amongst publicans.

3380. *Chairman.*] A barrel is 36 gallons, is it not?—Yes; and that is the most approved recipe I have ever met with.

3381. Mr. Gregson.] Do you think the taste of that beer which has been adulterated in the way you describe, is generally preferred by the public to that which is not mixed?—I will not say that exactly; the articles I mentioned give it as nearly the original flavour as possible.

3382. Mr. Swift.] Have you had any experience in the adulteration of ale?—Yes; I can speak to that as well.

3383. *Chairman.*] What is the price of porter per gallon?—One shilling at present; and there is a discount of five per cent.

3384. In 36 gallons, the publican would save 8 s.; what would those articles come to which you have enumerated?—Not above 2 s. 6 d.

3385. Mr. Moffatt.] At what price do you calculate the sugar?—Fourpence a pound; gentian is cheap, and quassia is cheap.

3386. That would give the publican, according to your calculation, an additional profit of 5 s. 6 d. for every barrel of beer?—Yes.

3387. Mr. Swift.] Is it not customary for publicans to sell the beer at the price which they pay to the brewers, so that this adulteration forms their actual profit?—Yes, many publicans do so.

3388. Mr. Moffatt.] So that if this practice were not followed the public must, of necessity, pay a higher price for their beer?—Yes.

3389. *Chairman.*]

3389. *Chairman.*] Have you heard the evidence given by the former witness regarding the use of cocculus indicus?—Yes, I have.

3390. Do you at all believe in the use of cocculus indicus by publicans?—I do not think it is used by publicans.

3391. You believe they do not use any material injurious to the public health?—Except copperas (sulphate of iron), and roach alum. I have known single instances of tobacco being used in beer. Those articles I mention as being generally used. Perhaps, occasionally, you might meet with a publican who would use tobacco in his beer.

3392. Mr. Swift.] How did you gain that experience; you speak generally as to the practice of publicans?—Merely from my having been connected with the brewing business so many years, I have known it to be the case. I have known detections made amongst publicans.

3393. Brewers, you say, do not adopt this fraud?—They do not generally. I know there are certain ingredients used by brewers in a small way of business. I do not know of any instance of their being used in the case of large brewers.

3394. Mr. Gregson.] What are those ingredients?—I have known quassia used in a brewery and roach alum, and also sulphate of iron. I have known cocculus indicus used in a brewery, but merely used as an experiment.

3395. Mr. Swift.] You do not think that cocculus indicus is used generally by brewers, or by publicans?—No; I know that this particular brewer used some cocculus indicus, but he drank his own beer that he made from it, and it had no effect upon him.

3396. Mr. Gregson.] Do you mean that it had no prejudicial effect, or that it did not intoxicate?—It did not intoxicate him.

3397. Mr. Peacocke.] Your experience has been confined to brewing beer?—I have known the trade generally; in my situation as a brewer, it was my duty to visit the publicans' cellars to keep them from this sort of thing.

3398. The only test you have alluded to for beer, is drinking it?—I could only tell by that whether they had been doing anything with their beer.

3399. Was not it owing to the excellence of this mixture that even you were taken in?—No.

3400. Could you by your taste detect the difference between that mixture which you speak of and the original beer supplied to them?—Yes.

3401. The public could not?—Not generally, unless they were very excellent judges of beer and made it their study.

3402. How do you account for the presence of cocculus indicus in beer which the last witness spoke of, if neither the publican nor the brewers put it in?—I do not believe it was put in, though I heard the last witness say he could detect the presence of cocculus indicus; I do not know any test for it.

3403. Probably you have not extended your studies to chemistry?—I have had certain samples of beer tested by a chemist, but he never could discover any one vegetable extract from another.

3404. Mr. Gregson.] Were those samples from brewers or publicans?—Beer which I had mixed on purpose to try whether he could find those articles.

3405. Mr. Peacocke.] To see whether he could detect them?—Yes, to see if he could detect my roguery.

3406. Lord C. Hamilton.] Did the person you refer to tell you others did it with success?—Yes. I did not intend this answer to imply that other persons were successful in detecting adulterations.

3407. Therefore the practice does obtain somewhat in the trade?—Yes, I believe in Derbyshire cocculus indicus is used by publicans; I know the publicans there generally brew their own beer, and I believe it is used to a great extent there; I have been told so by excise officers.

3408. Gentian is generally used instead of hops?—Yes, by publicans.

3409. Mr. Moffatt.] Have you ever known gentian used instead of hops, in making beer?—I have known quassia used by brewers.

3410. Have you known beer brewed in which there were no hops at all?—No, not without hops; the bitter from quassia is so pungent a bitter that it could not be used without hops; the bitter from quassia remains in the throat very long after the liquid has passed down the throat, so long as to become unpleasant to the taste.

3411. You have only known, that when the brewers used inferior hops they have

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Mr. E. Wickham. have used a small quantity of quassia?—Yes; the bitter of 1 lb. of quassia is equal or 16 to 20 lbs. of hops.

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3412. Is quassia at all injurious to the public health?—No.

3413. Mr. Peacocke.] Have you ever been surprised at all by the quickness of the intoxicating effect of beer upon the parties who drink it?—I do not think I ever observed that parties get intoxicated quickly on beer.

3414. If you knew, as a fact, that parties did get intoxicated quickly on a small quantity of beer, would not that lead you to suppose that there was cocculus indicus, or some intoxicating compound, in it?—I have tried a great many articles, in order to induce intoxication, and I cannot produce it quicker than by the real thing, malt and hops.

3415. Chairman.] Did you ever try cocculus indicus?—I have seen cocculus indicus tried; I never drank any of the produce of it myself. I have got the extract from an ounce of cocculus indicus, and mixed that in a proportion of beer, for a brewer who was desirous of testing this thing himself; and he drank it; I did not.

3416. Lord C. Hamilton.] Did you ask for cocculus indicus, or the technical name we heard?—I asked for cocculus indicus, and had it ground for me.

3417. Mr. Moffatt.] What was the effect upon the man who swallowed the decoction?—No effect; he drank three pints of beer, and the extract of cocculus indicus mixed with it.

3418. You think you could get intoxicated more rapidly with gin than beer?—Yes.

3419. Mr. Peacocke.] Have you ever heard of multum?—Never before to-day.

3420. Mr. Gregson.] You think three pints of beer would not make a person intoxicated?—No; he, the brewer I spoke of, considered that that proportion ought to make a man intoxicated.

3421. Mr. Swift.] You said that cocculus indicus, so far as your experience went, was employed in the breweries of Derbyshire?—I was told so by Excise officers.

3422. Do you know why they use it in preference to ingredients which are so very much superior?—No.

3423. The large brewers in London, you say, sell porter at 1s. a gallon; when they see it retailed at public-houses at the same price, they must know that there is some adulteration?—They must imagine so.

3424. A man could not keep a large palace of that character and live on no profit?—No.

3425. Mr. Kinnaid.] Is that creamy effect produced in bottled beer the genuine production of malt and hops, or is there some ingredient put in that gives that appearance to it?—I think it is the real effects of malt and hops. I do not think there is anything put to it to cause that.

3426. Lord C. Hamilton.] Do you know of any chemical admixture being put for the purpose of raising a froth?—No.

3427. Mr. Swift.] Is not copperas used for that purpose?—That is the use of copperas in draft beer. I know of no other use of copperas in beer than that.

3428. Mr. Gregson.] Is it generally used for that purpose?—Yes; roach alum also tends to give it a head. I would also remark that it is in the power of the Excise generally to put a stop to the adulteration of beer.

3429. Chairman.] In what way? The Excise have now the full power to enter a publican's cellar, to make what examination they please in the cellar, at all reasonable times. If they were to carry that out, they would, in a great measure, stop the adulteration. I am satisfied, if I had the assistance of two Excise officers, I could detect amongst publicans three cases a week, at any rate, of the use of these articles.

3430. They do not go in sufficiently frequently, or choose their hours?—They have not time to go into these matters thoroughly. The Excise officer has a great deal to do, and he is supposed to walk as much as 16 or 20 miles a day.

3431. Lord C. Hamilton.] Their great object is to get a money fine; it is more to protect the revenue than the public health?—Yes.

John

John Ayshford Wise, Esq., a Member of the Committee; Examined.

3432. Chairman.] YOU have had a communication, I believe, with some of the British authorities in Spain?—Yes; a friend of mine who was connected with the public service of this country in Spain, hearing of this Committee, communicated to me that the Spanish Government, in consequence of the immense quantity of adulterated drugs and other articles which came from this country into the ports of Spain, found it necessary to look into that question, and last December the Cortes passed a law creating a Council of Health, subordinate to the Ministry of the Interior, with regard to the question of the adulteration of food, especially with regard to the adulteration and contamination of drugs. I have selected from his very voluminous correspondence three points, the inspection of drugs, the dispensing of medicines, and secret and patent medicines, all of which have been alluded to. With regard to the inspection of drugs, at all first-class custom-houses in Spain there are two inspectors of medicinal substances, who are to be doctors or professors of pharmacy; in other custom-houses there is one inspector; all drugs and chemical products are to be examined and analysed by the inspectors, and if false names are given, or any articles brought in a mixed or adulterated state, and their use in any way calculated to injure health, the inspectors are to recommend their destruction; but this extreme measure is not to be resorted to until after consultation with the Board of Health. With regard to dispensing medicines, the rules and regulations are that duly and legally authorised apothecaries are the only persons allowed to dispense medicines, whether simple or compound, and the apothecaries must not make up any medicines without a medical prescription. One of the members of the Committee has alluded to prescriptions being written in the native language; in Spain the order is, that all prescriptions of doctors must be written in the Spanish language without erasure, abbreviation, alteration, interlineation, or any kind of correction, and must clearly express, without any sign or symbol, the quantity, weight, or measure of the ingredients. Apothecaries are not allowed to dispense quack medicines, or to make up doses ordered with a greater quantity of drugs than those specified in the formularies, and exceeding that which prudent practice would authorise, without first referring to the doctor who drew up the prescription; should the doctor insist that there was no mistake, and that his prescription be made up, he must write at the foot of his prescription, and sign for the guarantee of the apothecary the following note: "At the instance of the apothecary I ratify this prescription, and I hold myself responsible for any consequences that may ensue." With regard to secret medicines, all secret medicines are prohibited, and all privileges and patents for their manufacture and sale are abrogated. Every possessor of a valuable secret remedy, and who is unwilling to make it public without pecuniary remuneration, is to communicate his recipe to the Minister of the Interior, with a circumstantial report of the trials or experiments he has made to ascertain its efficacy. These documents are to be forwarded to the Royal Academy of Medicine, where a commission will be appointed to examine the remedy, to consult the inventor if deemed expedient, and to make their report. If after the necessary experiments the remedy be found useful to humanity, the academy will propose the recompense which ought to be granted to the inventor, and should the inventor consent to accept the sum proposed, the remedy will be made public, and its composition will be recorded in the official dispensatory, and be made one of its formulas. Those are the regulations my friend has communicated to me from Spain. Perhaps they may tend to throw some little light upon the subject.

3433. Mr. Gregson.] Does he know how long those regulations have been in operation?—Since last December.

3434. Mr. Swift.] That was owing to the quantity of adulterated drugs sent from this country?—Yes.

J. A. Wise, Esq.,  
M.P.

9 April 1856.



*Mercurii, 16<sup>o</sup> die Aprilis, 1856.*

## MEMBERS PRESENT.

Lord Claud Hamilton.  
Mr. Moffatt.  
Mr. Peacocke.  
Mr. Swift.

Mr. Wise.  
Mr. Otway.  
Mr. Kinnaird.

LORD CLAUD HAMILTON, IN THE CHAIR.

Mr. Potto Brown, called in; and Examined.

Mr. P. Brown.  
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3435. *Chairman.*] YOU are engaged in the trade of making flour very extensively?—Yes.

3436. And have been so for some years?—Yes.

3437. From time to time I presume your attention has been called to the habits of the trade, with respect to not producing a pure article?—Yes; I would just say that the character of the evidence I am about to give has for its object, in some measure, doing away with the inconvenience which there is in the making of good flour by the statute of the 6th and 7th Will. 4; my object is to do away with these restrictions. I have been in the meal business about 40 years, and I do not profess to explain the chemical properties of flour. I confine myself principally to the practical results of my own experience in making wheat into flour, and I have studied to make that sort of flour which would produce the greatest quantity of bread. Then I would further add, that foreign wheat is better than English; that there is less art employed in its cultivation, the land producing only about 20 to 25 bushels per acre; foreign wheat is grown principally on maiden soil, and each grain of wheat contains a greater proportion of gluten, the quality being more condensed. English wheat makes weaker flour than foreign wheat, the land producing a much greater quantity, from 27 to 32 bushels per acre. The millers in the country have great trouble to compete in quality with foreign produce; my business being in London, I find that the London bakers are very particular about the quality of the flour they use, and that they are good judges, and know its value to 6d. per sack; they require the flour to produce bread of the following quality: the loaf must be of a white colour, and a good height; the corners free from a doughy skin; the crust not to dye of a brown colour; it must cut with softness, with a plain surface and no large holes; the reasons why there should be no large holes is, that the industrious classes are very particular when they spread their butter it should not slip into holes and consume a large quantity of butter; they like an even surface. It may perhaps appear trivial to the gentlemen present, but the lower classes consider it to be of great importance. To give the above qualities to my flour I add one part of bean flour to 60 parts of wheatmeal. Never more than one part in 40. One in 60 is almost my universal practice. When the wheat is grown and injured, in a wet harvest, I add one part in 40. The object of adding the beans is to create the qualities which I have before described. As I said before, I do not profess to give any scientific description of the quality of wheat, but I may add that I learn from Johnson's Chemistry of Common Life that beans contain 24 per cent. of gluten, that wheat contains 10, and that rice contains 7½, and potatoes eight, and I may add that beans are very nutritious, and as shown before, contain more gluten and produce more flesh than wheat.

3438. Mr. Peacocke.] What do you mean by that expression?—If we give beans to animals they lay on flesh quicker and faster than wheat.

3439. Mr. Wise.] How much per cent. did you say that wheaten flour had in gluten?—I learn from Johnson's Chemistry of Common Life (I do not profess to understand chemistry) that it contains 10 per cent. of gluten.

3440. How much per cent. of starch?—Seventy-two per cent., two per cent. of

of fat, and sixteen of water. The beans add to the strength of the flour, containing more gluten than wheat, and cause the dough to bear more fermentation without its becoming sour, therefore giving more of the qualities that the bakers require for bread. If too many are added, a doughy streak makes its appearance a little above the bottom crust of the loaf. They are put in to improve the quality, not to cheapen the price. The use of beans is attended with much trouble; they require to be twice kiln-dried, split, husked, and ground. They produce for human food 65½ per cent.; for food for cattle, 16½ and 18 per cent. waste. I may observe that wheat varies very much in the quantity that is produced in the district wherein it may be grown; therefore, my observations are confined to wheat grown in Huntingdonshire and the Isle of Ely. Our wheat contains 76 per cent. of flour, 20 per cent. of offals for cattle, 1 per cent. of seeds, and about 3 per cent. of waste. White peas improve the appearance of flour, but not the quality, and are put into it to cheapen it, and certainly are very wholesome. I may, perhaps, add here that I do not ever put anything into my flour to adulterate it, but to make it better. Barley is mixed with wheat in some districts to cheapen the price. In other districts wheat is mixed with barley to improve the quality, particularly in Northamptonshire. The poor people consider barley flour more nutritious than wheat flour. I do not know that that is the case. I am doubtful of the point; but that is the universal opinion of the poor people. Bakers use a small portion of potatoes to give softness to the loaf, and to increase its size and moisture.

3441. *Chairman.*] You have no particular cognisance yourself of the practice of the baking trade?—No; no further than I converse with the bakers to ascertain what sort of flour they prefer, and endeavour to make it so as to enable them to sell bread of a good quality.

3442. Then, in fact, the Committee understand you to improve your flour to the taste and demand of the bakers?—Exactly so.

3443. Do you put potatoes?—I never put potatoes; the bakers use them.

3444. You put beans and barley sometimes?—When I send flour into Northamptonshire I mix wheat with barley, not barley with wheat.

3445. You mean the main quantity is barley?—Yes; they want to improve the quality, and therefore we mix it.

3446. Mr. Peacocke.] That is the particular fancy of the Northamptonshire people?—No; in dear times they must eat barley; they cannot afford to buy wheat.

3447. *Chairman.*] What is the article generally called?—Barley.

3448. You improve barley with wheat?—Yes.

3449. Mr. Moffatt.] You adulterate the wheat by mixing barley with it?—Yes.

3450. By mixing a superior article?—Yes.

3451. Mr. Peacocke.] Does the baker sell it as barley bread?—The bakers sell the flour, and the poor people manufacture the flour into bread themselves generally.

3452. They actually prefer it; the demand is for barley bread?—Yes. I understand in some districts they mix the wheat with the barley to cheapen it; that is another side of the question. I may add, as a rule, it is generally admitted that mixed flour is the most wholesome; that beans mixed with oats for horses are considered very nutritious and not deleterious. I may add that one of my Huntingdon customers prided himself for many years on not using any mixture in his bread, and he lost nearly all his business; his bread was genuine. I may perhaps be allowed just to say, why should not people mix barley, beans, or wheat, to give the poor man good, wholesome, or cheap bread? Is it not desirable? Why should the working man be forced to eat dear bread when he can have a cheaper and better quality?

3453. *Chairman.*] If you wish to produce a finer appearance in the flour and to make it appear whiter, what process do you pursue in order to give it the appearance of whiteness which it has not in the ordinary process of grinding?—I put one part in 60 of beans.

3454. Is that for the colour?—That is for the strength, that it may ferment more in making it into dough.

3455. Confine yourself for the present moment to colour; a great deal of evidence has been before this Committee that the public judge much by the colour, and it has been alleged that a certain portion of admixture is useful.

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You say you do not adulterate, you make things better; if it is for the production of a better colour, what do you do in order to produce a better colour in the event of its being ground?—I do not use anything to improve the colour; I have used peas, but the customers do not like it. If I was going to send flour to Manchester, and peas were cheap, I should use peas to give it colour, but I never have done it; not once in 10 years.

3456. Have you heard of any one using chemical agents and other matters of a totally different character; not of a cereal kind at all?—I should say never; I should say, I have understood that people sometimes mix alum with the flour when it was more strictly prohibited by mayors of towns, but not recently.

3457. Mr. Otway.] Are the Committee to understand you, that they mixed more alum when it was more strictly prohibited than they do now?—Yes.

3458. Is alum more strictly prohibited now than formerly?—No; the public yield to it; it cannot be dispensed with.

3459. Do the Committee understand you that alum is less strictly prohibited now than at any other time?—The law has become obsolete.

3460. Mr. Wise.] You say the law has become obsolete; has it become obsolete in this case; you have sold flour mixed with peas and beans and other grain as wheaten flour?—I never mix, only with beans perhaps once or twice in my life I may; I have sold it as mixed flour.

3461. Have the bakers who used your flour sold their bread as mixed bread, and complied with the Act of Parliament by making a large M upon their loaves?—I should say not.

3462. Do you think that the public, if they knew that their loaves were mixed with pea or bean meal, or with barley meal, would purchase those loaves?—Yes; my customers in the neighbourhood where I reside know that I use beans; everybody knows it with whom I do business.

3463. Chairman.] What is the difference of price between wheaten meal and barley meal?—Barley meal is worth now about 17 *d.* per stone, and the cheapest flour is worth 2 *s.* 3 *d.*

3464. Do you make any difference in the price you charge in consideration of the different qualities of that which cost 17 *d.* per stone and that which cost 27 *d.*?—I never mix barley with wheat.

3465. Or wheat with barley?—I have not done that for 20 or 30 years; I do not like the trade; I grind for the London market, and it is beans that I mix.

3466. You state that foreign wheat is better than English, therefore I presume you would mix it with foreign wheat to give it a better appearance?—Yes; I have bought foreign wheat and taken it 60 miles into the country, and mixed it with the English wheat, and I can get from 1 *s.* to 2 *s.* per sack more for it.

3467. What effect has that mixture to the eye?—There is no difference.

3468. It is not in the fineness of the flour or the colour that the advantage is gained?—No, not in my case.

3469. You do not know in the trade of any process which is used, as you have given so much evidence about bakers, in order to make the flour absorb more moisture?—No, it is not generally in use.

3470. Mr. Wise.] Have you never heard that rice flour is mixed with wheaten flour?—Yes; I sometimes mix rice myself when it is cheap.

3471. Does not rice, though itself a wholesome article, absorb a great quantity of water?—Yes, rice absorbs a large quantity of water.

3472. Therefore any baker who uses rice flour mixed with wheaten flour, has a very great advantage in that absorption?—I should think not great, because the bread is baked to one consistency; whenever we use it, it is to cheapen it, but it makes the bread eat softer and has the same effect as potatoes; we are obliged to consult the public taste, and if I use rice I use it in the same proportion as beans, and never more.

3473. Mr. Swift.] You said just now that alum could not be dispensed with?—No.

3474. Why?—It improves the colour of the bread and makes the loaves higher.

3475. Mr. Wise.] Has not alum another very important quality; is not alum used to impart to flour of second and third-rate quality the whiteness only to be obtained from the very first-class wheat?—Alum improves the colour of all wheat;

wheat; if I have white wheat it improves the colour, and if I have brown wheat it improves it very much.

3476. So that the flour of third-class and very bad wheat might be mixed with alum and sold as the flour of first-rate wheat?—Yes; but the smaller the wheat, or what some people call the lowest wheat, the more nutritious it is.

3477. Mr. Peacocke.] You have spoken of foreign wheat; let the Committee understand what you mean by foreign wheat; where does the foreign wheat come from?—From the Baltic and the Black Sea.

3478. Do you import American wheat?—Yes.

3479. Do you believe the wheat imported from the Mediterranean, or the Baltic, or America is all of a very superior quality to the English wheat?—It is almost always.

3480. That is the characteristic of all foreign wheat?—Yes; that is the reason why we use beans.

3481. Do you know the Essex white wheat?—Yes.

3482. Is not that rather superior to foreign wheat?—No, the best white wheat I have ever seen came from America, and I ground it.

3483. But taking the ordinary run of wheat, is not the Essex white wheat of a superior description to the general quality of foreign wheat?—Yes.

3484. Does not Essex white wheat command a higher price in our market even than foreign white wheat?—I think not; I am not certain.

3485. Do you ever make use of Essex white wheat to mix with your inferior kinds, to give it colour?—Never.

3486. Why not?—It is so expensive to bring it down into my neighbourhood; I use our own country wheats, and never use foreign if I can help it; I have used foreign only one year out of the 30 that I have been in business.

3487. You say you do not use foreign wheat because it is so expensive?—I do not buy the best foreign wheats; we buy for strength, to make the quality bright.

3488. You have given as a reason why foreign wheat has more gluten in it, that it is the produce of alluvial and virgin soil?—Yes.

3489. You also say that you are particularly acquainted with the wheat of the Isle of Ely?—Yes.

3490. Has not there been a considerable quantity of land recently reclaimed in the Isle of Ely?—Yes.

3491. Do you find a superior quality of wheat grown on that recently reclaimed land?—Beyond all doubt.

3492. Do not you think that the Isle of Ely wheat will compete with the foreign wheat?—The wheat that is grown by a bad farmer who produces a small quantity per acre, is equal to foreign wheat, and wheat from land on which wheat has not been grown is equal to foreign wheat.

3493. Would not wheat produced under a good system of farming in the Isle of Ely, on recently reclaimed land, be able to compete and more than compete with the foreign wheat?—The larger the quantity of wheat that is produced per acre the less value the wheat is necessarily.

3494. Where there is a good system of farming in the Isle of Ely, on recently reclaimed land, is not the wheat as good as foreign wheat?—It is as nutritious.

3495. And contains as much gluten?—Yes.

3496. Mr. Wise.] You said that you considered that the foreign wheat was the best. Is this your theory, that the purest wheat contains the least nourishment?—What I wish to imply is this; if an acre of land, taking perhaps the extreme, produces 60 bushels of wheat, and another acre produces 20 bushels, although there is a much larger quantity of human food upon the acre which produces 60 bushels, yet in each bushel there will not be so much gluten.

3497. Do you maintain that the purest wheat has the least gluten and the least starch?—What I mean to say is, that the purest flour is the most unwholesome.

3498. Mr. Otway.] Why is the purest flour the most unwholesome?—The reason is this, that the purest flour has the least quantity of husk in it; the more free the flour is from the outer husk of the berry the more unwholesome it is; the husk assists in digestion; you will observe that doctors recommend brown bread for weak stomachs; if you have flour perfectly pure it is more astringent.

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3499. Mr.

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3499. Mr. *Wise*.] Can you inform the Committee how many pounds of flour there are in a sack?—Two hundred and eighty.

3500. How many loaves are generally made from it?—From my flour the bakers make, on the average, 94, some 90, and some 96.

3501. Are you aware of the per-centage of moisture in bread?—No, I am not.

3502. Are you not aware that there is from 33 to 35 per cent.?—No.

3503. When you mix rice with flour it absorbs a great deal more moisture than wheaten flour; what effect would that have upon the poor man's loaf?—It would make it, I should say, of less value; I do not think it would make it of less value on account of absorbing the water; I think it is what the bread itself contains; the loaf would not contain any more moisture when baked.

3504. If flour naturally contains from 33 to 35 per cent. of moisture, and flour can be made which would contain 45 or 50 per cent. of moisture, would not that affect very much the character of the loaf which the public buy?—I think that the bread, when baked, will contain no more moisture in the one case than in the other.

3505. Have you made the experiment?—No.

3506. Mr. *Peacocke*.] You do not come here to give practical evidence upon baking?—No; living in the country, and the London millers having such a decided advantage over us in the use of foreign wheat, I wish to state, if we are prevented from using beans, it will have a great tendency to destroy my trade.

3507. You want to make out that the foreign wheat is very superior to the English?—Yes, it is; there is no question about it.

3508. Mr. *Otway*.] Do you mix beans and rice with your flour for the purpose of profit?—No, for quality. I use beans when I sustain a loss.

3509. Are the Committee to understand by your remarks, that you are here to give evidence for the purpose of protecting the country millers in the position in which they stand as regards the London millers; that the London millers have advantages over you, so that you are compelled to mix the articles you have mentioned with the wheat, in order that you may compete with the London millers?—To make my flour assimilate to the quality of theirs; my object in using beans is not the extra profit which I get by selling the beans for wheaten flour, but to make the quality of my flour assimilate to that of the London millers, because it does sometimes happen that bean flour costs me more than wheaten flour, still I am compelled to use it.

3510. Mr. *Peacocke*.] What is the price of bean flour?—It varies very much according to the season; generally speaking, it is much cheaper than wheat flour.

3511. What is the average price of bean flour?—I never sell bean flour.

3512. You have bought it, have you not?—Beans are worth about 50s. a quarter, and wheat is worth 72s.; what I wish to impress upon the Committee is the advantage I derive from making my flour assimilate in quality with the London flour.

3513. Mr. *Otway*.] Do you mean the advantage that you derive, or that the public derive?—The public.

3514. Do you mean that your flour is better than any flour the London millers supply?—No; the London flour is better than mine, but mixing beans makes mine come nearer the quality.

3515. *Chairman*.] Do not you mean to say, if you did not use rice or beans, you would not obtain the same price for your flour that you are enabled to do in the London market, owing to the mixture?—Precisely.

3516. Is not the advantage more to yourself than the public, because they might mix as much bean flour and rice as they liked?—Yes; it enables me to keep a trade when I otherwise might lose it. If I was going to sell bean flour for wheat, I should mix a large quantity. If I mix more than one part in 40 it spoils my flour; it makes a brown streak at the bottom of the loaf.

3517. You are convinced that in this admixture of yours there is nothing but what is wholesome and what the public desire?—Certainly; the public would not like peas mixed with the flour, but nobody objects to pea soup.

3518. Mr. *Peacocke*.] You state that you cannot compete with the London millers in the London market, on account of the facility with which they obtain foreign wheat?—Exactly.

3519. And for the purpose of meeting that difficulty you mix bean flour with wheaten flour?—Yes.

3520. The

3520. The same advantage that they enjoy in the possession of the London market, you possess in the enjoyment of the country market?—Yes.

3521. Mr. *Wise*.] I understood you to say, that it was notorious in your immediate neighbourhood that you sold mixed flour?—Yes, and in London too.

3522. You do not profess to sell pure wheaten flour?—No.

3523. Mr. *Otway*.] Recurring to the former part of your evidence, are the Committee to understand that the prohibition against this admixture, to use a mild phrase, is less enforced now than it was formerly. Has your attention been called to several convictions that have appeared lately in the newspapers?—Yes.

3524. Upon what grounds do you say that the prohibition is less strictly enforced now than it was formerly?—We had not heard of any convictions for years, not for mixing beans with flour; it has lately sprung up, which drew my attention to the fact.

3525. At this moment you conceive that it is not less enforced than it was formerly?—Just the last three weeks or a month.

3526. Do you think the sitting of this Committee has had any influence?—I do not know.

Mr. *Thomas Karr Callard*, called in; and Examined.

3527. *Chairman*.] ARE you a Baker?—Yes.

3528. What is the subject you would wish first to give information upon?—The use of alum.

3529. Can you refer to a particular witness whose allegations you wish to disprove?—It is Mr. Thompson's evidence; in the "Times" of March the 16th his words are these, "Alum was used in Belgium and Paris, and he did not think there was any bread to be obtained in London which did not contain it, except it was made privately."

3530. What is the remark you wish to make upon that evidence?—I as a baker in London have to state that such is not the case; I have been in business now 10½ years, and, after the first two or three weeks (that is, after the business was completely under my own management), I never used a particle of alum in the manufacture of my bread.

3531. Mr. *Swift*.] Where do you reside?—At 4, Blenheim-terrace, St. John's Wood; what I wish to state further is, that I am not peculiar in this respect; that there are a vast number of bakers in London who do not use alum, and never did; and I have in my possession now 43 letters from bakers, in London and its vicinity, who are prepared to state, on oath if required, that they do not use alum; some of them have done so perhaps 20 years ago, but most of them never used it; I have reason to believe that that is a very small proportion. (*The Witness handed in a number of letters.*)

3532. *Chairman*.] We are not to assume that all those who have not written use alum?—No.

3533. Mr. *Moffatt*.] Those are from bakers in various parts of the metropolis?—Yes, and in the suburbs.

3534. The rich neighbourhoods and the poorer ones?—Yes.

3535. Mr. *Swift*.] Are they all what are called high-price bakers?—I think they are, but I am not sure of that; some of them I do not know; I do not come here to deny that alum is used in the manufacture of bread; it is, I believe, extensively used, but merely to correct the impression about its universal use.

3536. Mr. *Otway*.] It is generally used, you say?—It is used by the larger proportion.

3537. *Chairman*.] Might it not be the case, from the habit of persons who sell the flour to the bakers of improving the appearance of it by the admixture of alum, that many persons might be using it without being acquainted with the fact that they have alum in the flour of which they make their bread?—That may be the case; the general impression is that the baker puts it in.

3538. Some of the evidence was that the bakers obtained it in the flour they bought?—That may be the case; but I am speaking on behalf of bakers.

3539. Mr. *Swift*.] Could you distinguish yourself any flour that you purchased of your miller if there was alum in it?—No, I could not.

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3540. *Chairman*.]

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3540. *Chairman.*] In your business as a baker it must be essential to obtain an accurate knowledge of the qualities of flour; have you any process by which you ascertain whether the appearance of whiteness is fictitiously communicated by chemical agents, or is the result of the fineness of the flour?—We have none; we never suppose the flour we use to be adulterated.

3541. The Committee have had before them gentlemen who stated that they did not see any harm in using alum, because it improved the article generally, and improved its appearance, which was a benefit to the public; that being the case, may you not have been the victim of this system without being aware of it?—I may have been, but it is my impression I have not been. I do not think it is by any means the custom, especially with those who sell the best flour.

3542. Take Mr. Lewis Thompson's evidence; he states with respect to bread, "I have within the last eight months examined bread obtained at 78 different shops;" then he goes on to say what proportion of them had alum; he does not say the bakers put it in; he says the product contains it?—I understand him to mean that the baker puts it in. He says, "To a certain extent the addition of alum was beneficial, although he could imagine cases in which it might be otherwise. He did not think there would be any objection to a baker putting up in his shop white bread mixed with alum; the custom was well known, and he did not think there was any fraud in it."

3543. I asked him that question, whether he thought that the public would buy such bread if he put it up on a board that he did mix alum, and he acknowledged that he did not think they would?—The reference here is to bakers.

3544. Mr. *Moffatt.*] Did you ever hear of a miller selling flour adulterated with alum?—Not in London.

3545. You never heard of a single instance of a miller selling flour adulterated with alum?—No.

3546. In the country, have you?—Only what has come out of late.

3547. As a tradesman long engaged in the purchase of flour, have you ever heard of a miller selling flour mixed with alum?—No; except the charges made in the "Lancet," which are all recent.

3548. Not in your own experience as a trader?—No.

3549. Mr. *Wise.*] What is the article called bakers' stuff?—That is ground alum, mixed, I believe, with salt.

3550. Is not a good deal of salt used by bakers always?—Yes.

3551. What quantity is used to a sack?—We use about eight ounces to a bushel, which would be about 2½ lbs. or 3 lbs. a sack of flour.

3552. Is that what is called bakers' stuff?—No, that is salt.

3553. And what is called bakers' stuff is a legitimate mixture?—No.

3554. Mr. *Moffatt.*] Is salt a legitimate mixture?—Yes, it is allowed by Act of Parliament.

3555. Mr. *Wise.*] Could you suggest any remedy more efficient than the present law, by which we could prevent the use of alum in bread?—No, I am not prepared to suggest it.

3556. You think it is a very great injury to an honest tradesman, do you not, that a baker should mix alum with very inferior flour, and make inferior flour appear as if it were made with the best wheat?—It is a great injury if we are not able to compete in price. A baker who uses very inferior flour consequently sells very much cheaper; by the use of a certain quantity of alum he can make his bread look quite as good as ours, which is made from better flour and dearer flour. Consequently, such bread is often 1 d. or 1½ d., sometimes even 2 d. cheaper than other bread. It looks quite as good, and our customers are very often much dissatisfied, and think they are imposed upon by us.

3557. Do you not think the working classes are very much injured by their love of what is called beautiful white bread?—I think it likely, because flour is at any time astringent, and medical men recommend the occasional use of brown bread to correct it; but if an article like alum, which is very astringent, is added to it, I think the constant use of it must be very injurious.

3558. Are you of the same opinion as the last witness, that the best wheat makes the least nourishing bread?—I do not think he rightly explained himself. I do not think he meant best wheat; he meant the wheat finely dressed.

3559. *Chairman.*] He said the purest wheat was the most unwholesome?—I cannot.

cannot understand that; I can understand this, if that was what he meant, that the finest dressed wheat was the most unwholesome. Mr. T. K. Callard.

3560. He explained that it had less of bran and gluten?—If it had all the bran, I should consider it pure. 16 April 1856.

3561. Mr. *Moffatt.*] The letters you have put in appear to have been written in consequence of some public meeting convened by advertisement?—We put an advertisement in the "Times;" one advertisement in the "Times" brought all those letters, with one exception.

3562. What was the purport of that advertisement?—In consequence of an impression being left upon the public mind by the evidence given before this Committee, that the use of alum in the manufacture of bread in London was universal, it was the desire of a few bakers who did not use it to correct that impression, and they would be glad for the bakers in London and the suburbs to write to that effect to a certain party named at the bottom. It was particularly requested that no one would reply unless they were prepared to verify their statement upon oath if it should be required, so that every precaution was taken that no one should write who was not acting *bonâ fide*.

3563. The consequence of that advertisement was, that you received communications from various parties with their names and addresses, stating that they did not use alum in their bread?—Yes; and also stating that they would verify their statement upon oath if required.

3564. Mr. *Otway.*] Do those 40 writers of those letters now maintain that they use no alum?—Yes.

3565. Did a considerable portion of them admit having used alum for some time?—The greater part of them had never used it; some state that they had not used it for, one says 10 years, one says 20, one 30, and one 40 years.

3566. Mr. *Moffatt.*] And one three years?—Yes; there is only one so recent as that.

3567. Mr. *Otway.*] Have you any idea how many bakers there are in London—Perhaps 2,000 or 3,000; there may be more.

3568. *Chairman.*] These are the only answers you have received; 40 out of 2,000 or 3,000 bakers, who allege that they do not now use alum?—That is all; but you must take all circumstances into consideration.

3569. Mr. *Moffatt.*] Have you any knowledge of how many bakers read the advertisement?—No; I suppose not one out of ten would see it; you know, yourself, how the "Times" paper is; you may take it up a hundred times, and not look through all the advertisements.

3570. Mr. *Otway.*] With how many of those bakers are you personally acquainted?—I should think perhaps 10 or 12; I am not prepared to answer that question; I know a great many more who do not use alum.

3571. Mr. *Wise.*] Have you read all those letters you have delivered in?—Yes.

3572. Can you state to the Committee the wishes and desires that are expressed by the writers of those letters in reference to the proceedings of this Committee?—Yes, the wishes expressed in some of the letters, but not in all; besides which I know the wish of a large portion of the trade; and it is, that something should be done to prevent the use of alum, and anything else that is injurious.

3573. *Chairman.*] Are you able to suggest a remedy for carrying out those wishes with regard to the use of alum?—That is rather a difficulty. There are two things which we would wish to impress upon this Committee: one is, that whilst we would be glad to have adulterations checked, we are particularly anxious that all improvements in the trade should not at the same time be checked; for as the Act of Parliament now stands, the baker who makes bread which by many medical men is supposed to be more wholesome than the ordinary fermented bread (I refer to unfermented bread), for so doing subjects himself to fine and imprisonment.

3574. Mr. *Wise.*] Is that the 3d & 4th George 4, the Metropolitan Act?—Yes; from an anxiety to prevent adulteration it states what may be used, and prohibits everything else. Now carbonate of soda and muriatic acid, by which the unfermented bread is raised, not being named, subjects the bakers using them to the penalties of the law; there yet may be many other improvements introduced (for we do not mean to stand still in the baking trade any more than in any other trade) in the manufacture of bread, and we do not wish to be shut



Mr. T. K. Callard. out from making such improvements; and I am sure this Committee do not wish it either.

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3575. What do you call improvements?—It is supposed by many that raising the bread by soda and muriatic acid instead of yeast is an improvement; I am not prepared to say whether it is or not; if you take that as an illustration, that is supposed to be an improvement, and by Act of Parliament it is prohibited.

3576. Your observations do not allude to the mixture of beans and rice, and things of that sort, to make a more attractive and saleable flour?—No.

3577. But improvements in the art of making bread rise nicely?—Yes; though I am not prepared to say that some substances may not be discovered that may not be an improvement there.

3578. You are aware under the Act of Parliament that the bakers have very great discretion, and there is no limit in fact to their ingenuity in mixtures, provided they sell their loaf marked with an M, as mixed?—If I may be allowed to venture a thought that has occurred to myself, I would like to ask this Committee how far that would be considered as adulteration. Rice, it has been stated, has been used in order to absorb more water, which is consequently a saving to the baker; but it has occurred to me, that if rice has that property it might be used after harvest, say three or four months after harvest; we cannot use the new flour alone, we are obliged to mix it with the flour of the growth of the year before. It seems to me very probable that if a small proportion of rice, if it has that property it is said to have, was mixed with that flour, perhaps about one-half per cent., that it would absorb the moisture that is in new wheat, and might make it fit to use at once, instead of having to wait until it gets four or five months old; I cannot say it would be so; I think it is not improbable that it might be so.

3579. From your experience, do you think it would be impossible to bake a loaf of half wheaten flour and half rice flour?—I think not, I do not know; I have no experience in that matter. You ask me what I called improvements. I am at a loss to say what improvements there may be, but it occurred to me there might be some improvements of that kind.

3580. You mean 1-6th or 1-10th of rice flour would be more probably nearer the proportion than one-half?—No. I did not say a half, but a half per cent.; if it were used in the proportion that is now spoken about, it would not be for the purpose of profit at all (it must be evident it could not be), it would be merely for saving time, instead of having to keep the flour until so many months old. It would be fit to use at once. I only say this in reply to the question what improvements I think might be made; it is possible that such an improvement might be made. Then what we wish is, that while you stop adulteration, you do not put a check upon all improvements.

3581. Could those improvements you suggest be carried out by the miller or the baker. If you use rice flour with wheaten flour, must they not be ground together?—No, it is not so now; bakers use rice.

3582. They can mix it themselves in large quantities?—Those bakers who do use it; but I do not think there are many that do.

3583. Would you knowingly buy wheaten flour mixed with beans or rice?—No.

3584. Do you think it improves the quality of bread?—No.

3585. Mr. Kinnaird.] Should you consider it a fraud so to do?—I should, because where it is used at all it is in large quantities. I have known of its being used to the amount of 8 lbs. in a sack, and used in that proportion I should say it was a fraud, but if such an improvement could be introduced (I do not know that it could) as using of one-half per cent., in order to save time, that the wheat might be used at once instead of requiring to be mixed with old wheat, I should not consider that a fraud. But then it would be necessary that the baker should get some permission so to use it, lest he should be charged with fraud.

3586. Do you consider the bread made from new wheat immediately, as wholesome to the consumer as that made from old wheat?—I dare say it is, but it is rough and unsightly.

3587. Mr. Wise.] You are aware there is no illegality in selling bread now mixed with rice, provided it be sold as such; rice is one of the articles mentioned in the Act of Parliament as permissible, but it must be sold as such?—Yes; but would the proportion of one-half per cent. require a mark. With regard to

to potatoes, I wish to make a remark; it is supposed that potatoes are used by bakers as an adulteration. Mr. T. K. Callard, 16 April 1856.

3588. Mr. Kinnaird.] Potatoo flour?—No, potatoes themselves; perhaps I may be allowed to read from the "Times," to show how the impression is confirmed: "The reports of the 'Lancet' first drew attention to the subject, and since then the minds of the most careless readers have been held in continual attention by the disclosures which have been made before the Parliamentary Committee. Let us confine ourselves for the moment to the one subject of bread; a few years back we heard nothing but the 'big loaf' and 'little loaf.' It was no doubt desirable to procure as large a loaf as possible for our money, but surely the case of the 'sound loaf,' as against the 'unsound loaf,' merits as attentive a consideration. It appears to be as well established as any fact well can be, that the loaf which is ordinarily purchased by the London consumer is mixed up with ingredients which should not of right enter into its composition. In some cases lime and ground bones have been detected in the composition which is by courtesy called bread; more usually the articles which are employed to depreciate the quality of the loaf are potatoes and alum; the potatoes give weight, the alum colour." In order to prove that potatoes are not used by the bakers as an adulteration, I would refer you to the relative price of potatoes and flour, to show how little would be gained by the baker, which will be the best proof that he does not use it for that purpose. The price of the best flour, the highest price, is 65 s. a sack, or 2½ d. a lb.; the price of the best potatoes would not be less than ¾ d. a lb.; now, quite one-fifth of that is waste. It is not passed through the strainer, which will bring up the price of what is used to 1 d. a lb. And then it is to be remembered that flour will make about one-third more bread than its own weight, owing to the water it absorbs, but potatoes not doing so will make the actual difference between the price of the potatoe and the price of flour, at the most, 1½ d. a lb. Now, the quantity of potatoe used by myself is 15 lbs. to a 12 bushel batch, from which 3 lbs. has to be deducted for waste, leaving 12 lbs. of potatoes; the weight of bread in 12 bushels is 768 lbs., so that there are 12 lbs. of potatoes in 768 lbs. of bread, or about one and a half per cent. Now the value of that bread is 7 l. 17 s. 10 d., and the saving effected would be 1 s. 3 d. I would leave it to the Committee to decide whether it is probable that a tradesman would depreciate property worth 7 l. 17 s. 10 d. in order to save 1 s. 3 d.

3589. Chairman.] You are proceeding upon the assumption that no one uses more than you do?—I believe that is the case; that is about the quantity used by the bakers.

3590. On the other hand, supposing a person used four times as much as that, the profit would be considerably increased?—They do not do so.

3591. Mr. Wise.] Would there not, independently of price, be an important sanitary consideration. From the use of the potatoe is there not much less nutriment and gluten in the bread?—One and a half per cent. would not amount to much.

3592. The nutriment would be of a different character?—I believe that the bread is better made from potatoes; I am now taking flour at its present high price of 65 s., but the more ordinary price is 45 s., and then the saving would be 3 d. upon that quantity, and 1½ d. upon a sack of flour; when it is less than 45 s. it is an absolute loss; but the baker uses as much potatoe then as he does if flour is 80 s. a sack; this shows that the baker does not use it for the purpose of profit.

3593. Chairman.] You are giving evidence to refute what was not intended by the witness?—I am not referring to any evidence; I am referring to the general impression upon the public mind, which is strengthened by this statement in the "Times."

3594. What do you conceive would be the best remedy for the evil that you are obliged to submit to now, you acting honestly, not using alum, and having to compete with those who do make use of alum?—I have not come here prepared to suggest any remedy, but rather to show the difficulty that lies in the way. Perhaps if I pointed these difficulties out, the remedy would suggest itself to the Committee. It is this, that analytical chemists who have given their opinion upon the subject of alum being used in bread have so differed that we should be afraid to have it left with any one analytical chemist, however eminent he

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he might be, to decide the point whether our bread contains alum or not. I say this out of no disrespect to any analytical chemist, but the reputation of a baker is too precious for him to lose unless there is indubitable proof of fraud. The chemical analysis has been very unsatisfactory with regard to our trade, for there has been scarcely a point raised on which analytical chemists have not expressed opinions diametrically opposite to each other. Mr. Thompson, before this Committee, has stated that alum could not exist in the form of crystals after baking; whilst Dr. Challis and Dr. Carpenter have both stated that it could be found, and they themselves had found it in crystals. Again, it has been stated that alum applied to flour will enable it to absorb more water, and by doing so, besides the adulteration, would be an additional fraud upon the public; whilst Mr. Thompson says, that chemically speaking, the addition of alum would not cause the bread to absorb a larger quantity of water. Again, Mr. Thompson, after the examination of 78 samples of bread, comes to the conclusion that bread is not to be obtained in London without adulteration with alum, unless it is privately made. Dr. Normandy, in his book upon chemical analysis, mentions but one exception, which is Mr. Gilbertson, in Judd-street. Dr. Hassall, in April 1851, examined 24 samples of bread, and the samples seem to be all adulterated with alum. In October he repeated the operation on 25 samples more, and pronounced these also to be adulterated with alum; whilst Dr. Taylor, on the other hand, states that in the specimens of bread which he had examined, he had not met with any adulteration with alum. Besides which you have had upwards of 40 letters from persons who declare that they do not use alum in the manufacture of bread.

3595. *Chairman.*] Several of them express their knowledge that it is done, and rather invite some process to prevent it in future?—Yes.

3596. Mr. *Otway.*] Does your experience, as a baker, go to this effect: that alum is not extensively used in the adulteration of bread in London?—It is extensively used, and we wish it stopped. What we are anxious about is this: if it is left to analytical chemists to decide whether my bread contains alum or not, seeing that analytical chemists have so differed, they may pronounce bread to contain alum when it does not.

3597. *Chairman.*] Would not that be met by the existence of an appeal?—Yes.

3598. Mr. *Otway.*] That would be a question of the competency of the Board, supposing such a Board to be established?—Yes.

3599. *Chairman.*] There might be an appeal?—It would be necessary that there should be some appeal. There is a gentleman present here to-day who could give evidence upon that point; he has actually put alum in order to test it in a loaf of bread, and sent it with another loaf perfectly pure to an analytical chemist of some standing and well known, who pronounced both loaves to be pure; and if such mistakes can be made the innocent may suffer with the guilty. There is another party who has been very much injured by a similar mistake. Dr. Hassall, before he examined the breads in 1851, examined 44 samples of flour, and he states that "in no instance was the presence of foreign matter of any kind detected." The question was asked me whether we supposed the flour to be adulterated in London; and this shows, if this is correct, that it is not; for out of 44 samples he did not detect the presence of foreign matter of any kind. After the examination of 24 samples of bread, and again of 25, three of the parties come forward and declare that they have not used alum, and that they desire further investigation; the flours that they used are then sent to the same party to be examined. I refer to Dr. Hassall and to what appeared in the "Lancet;" the three parties come forward and declare that their bread had not been adulterated with alum by themselves, and then eight samples of that flour are sent to Dr. Hassall from the three bakers, and upon the second examination Dr. Hassall answers that half of them are adulterated. That four out of eight are adulterated. In the first examination, out of 44 not one is adulterated. In the second examination, out of eight samples four are adulterated.

3600. *Chairman.*] From whom are you deriving those facts?—I take them from the "Lancet."

3601. Does Dr. Hassall admit his own inaccuracy?—No, it has never been admitted that he has been inaccurate, and one of those three persons, when his flour was said to be adulterated, took a sample of that flour to the Polytechnic Institution,

Institution, and Professor Pepper examined it, and gave him a certificate to the effect that there was neither alum nor even alumina in the flour. Mr. T. K. Callard.

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3602. In fact, your main difficulty is the contrariety of opinion which exists among chemists of equal eminence?—Yes; in consequence of which, whilst we are very anxious that adulteration should be stopped, it would be a still greater evil that it should be pronounced that I adulterate my bread when I am innocent. I had better be at the disadvantage of being unable to compete with those who do adulterate than be in danger of being charged with so doing.

3603. You do not see that by some process of appeal there would be any difficulty in meeting that objection in this way?—It might be a safeguard if when a loaf of bread is sent for to my shop, that the party before he takes it out of the shop shall state he is going to take it in order to analyse it; he shall allow me to take a portion of that loaf; it shall be sealed up, and also the portion which he takes; I shall put my seal, and shall not be allowed to open it until it comes to the hands of the analytical chemist; then if the analytical chemist who shall be appointed to decide shall state that it contains alum I shall send my portion of the loaf to some other analytical chemist that he may give his decision; that would be a safeguard.

3604. Have you any other suggestion to make to the Committee?—No.

Mr. Alexander Robertson, called in; and Examined.

3605. *Chairman.*] UPON what subject do you wish to give evidence?—There was a great hubbub at one time with reference to the adulteration of bread with alum; having met with Dr. Normandy, he was told that our bread was pure; it is better known by the name of Gilbertson's bread. Dr. Normandy stated that he could not conceive such a thing to be the fact, inasmuch as he had analysed some hundreds of samples of bread, and he never found any free from the adulteration with alum; I stated it was strictly possible that that might be the case, and yet not affect my bread. I challenged him to analyse our bread, which he said he would. I myself bought the alum, dissolved it in water, and worked it into the bread merely as an experiment, not for sale; I took it to Dr. Normandy, with a loaf made in the ordinary way at my establishment, and also a sample of the flour for his analysis; and I have a letter in my pocket which he returned to me, stating that both the loaves of bread and the samples in question were perfectly free from the adulteration of alum, being the only exception he had ever met with in London.

Mr. A. Robertson.

3606. Mr. *Moffatt.*] What proportion of alum was used in that bread which you mixed for analysis?—I cannot say whether it was one or two ounces in eight half-quartern loaves; that would be 16 lbs. of bread.

3607. *Chairman.*] You mixed the alum by first dissolving it and then mixing it up with the dough?—I took the sponge and mixed the alum with it, and made that sponge into bread which contained alum.

3608. Mr. *Moffatt.*] You are quite clear that you used one ounce of alum, and possibly two, to 16 lbs. of bread?—Yes.

3609. *Chairman.*] Are you acquainted with the practice of those who do mix alum with flour; do not they mix it in the powder?—I am not aware of how it is introduced; I am perfectly aware that it is introduced to a large extent.

3610. Do you know the quantity that is used?—It varies.

3611. You used a small quantity in the instance you have mentioned?—I should say not; it was a small quantity, but a large quantity in proportion.

3612. Did those two loaves which you sent to Dr. Normandy present the same sort of appearance to the eye?—No; one was considerably whiter; the bread which contained alum was considerably whiter. I should have known from its appearance that it was different to the ordinary way of baking at my establishment.

3613. Are you quite confident that Dr. Normandy examined both the loaves?—I should be sorry to say that he did; I only know that his report went that far.

3614. Mr. *Swift.*] Were those loaves made of the same flour?—Yes.

3615. Mr. *Moffatt.*] Were all the other ingredients the same, except that one of the loaves contained an ounce or two ounces of alum to 16 pounds of bread and the other not?—Exactly.

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3616. There



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3616. There was no difference in the process of making the bread?—None whatever; they were both made in the same baking. Dr. Normandy's letter I will read to the Committee: "28, Church-road, De Beauvoir-square, Kingsland-road, 16th March 1850. Dear Sir,—I have carefully examined the two loaves of bread, and the sample of flour which you left with me for the purpose of analysis, and I am happy to inform you that neither the loaves nor the flour in question contain alum. You are, therefore, one of the few bakers in London, if not altogether the only one, whose bread is free from this adulteration; for I have invariably found undeniable proofs of the presence of that substance in all the bread which I have hitherto analysed. I remain, dear Sir, yours respectfully, A. Normandy. Mr. Gilbertson, Judd-street."

3617. You are quite certain that there was no mistake, by exchanging the two loaves?—There is not the slightest shadow of a doubt as to the identity of the particular loaves.

3618. Mr. Otway.] You are sure that he examined them?—I am sure that he had them.

3619. Were you present when he examined them?—I was not; he states that he examined them.

3620. Chairman.] Did you ever communicate to him what you had done?—I never did; he charged me a guinea.

3621. Mr. Swift.] If alum was mixed by the miller of whom you purchased your flour prior to your having it, would you be able to distinguish the presence of alum in it?—I should merely do so by guess; I do not know that I should do so accurately; the bread would exhibit a different appearance without alum.

3622. What test would you apply?—I should judge from the appearance of the bread.

3623. Do you think you would be able to discover any quantity of alum mixed with a sack of flour from its appearance alone?—I do not; if I had been accustomed to make bread without alum I should notice a most considerable difference.

3624. Mr. Moffatt.] In point of fact, when you did mix alum with the bread which you sent to Dr. Normandy, you found the bread mixed with alum was whiter than that without alum?—Most considerably; any person could have told there was a difference.

3625. Chairman.] In your purchases of flour, you are anxious to see that the whiteness of the flour is not caused by alum?—I do not know; I think it is not a very necessary qualification for good bread that you should have white flour.

3626. Mr. Moffatt.] Did you ever hear of millers selling flour adulterated with alum?—I have heard of it.

3627. It has never come within your experience that you have bought flour from a miller in which you found alum to exist?—Never.

3628. Chairman.] Does not the price of flour somewhat depend upon its appearance with respect to whiteness?—I think not.

3629. You have other tests that you are guided by, and not by the whiteness?—There is a general appearance of superiority of quality; it is not always the whitest flour that will make the whitest loaf.

3630. Mr. Swift.] Do you examine every sack of flour that comes into your house?—No.

3631. Is it not quite possible that several sacks of a lot of flour might contain alum, without its coming under your supervision?—Such a thing is possible.

3632. Do not you think it is very probable?—I think it is very improbable.

3633. Why?—I think generally the flour contained in a load would be very likely to be manufactured at one time; and if one portion was adulterated with alum, the whole of it would be.

Mr. Alexander Clapperton, called in; and Examined.

Mr. A. Clapperton.

3634. Chairman.] WHAT is the subject upon which you wish to give information to the Committee?—To show the injustice that I suffered from the publication in the "Lancet," in 1851, relative to the analysis of 25 samples of bread that were purchased by Mr. Wakley.

3635. Mr.

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3635. Mr. Swift.] Are you a baker?—Yes.

3636. In business?—I have been out of business about four months.

3637. Were you mentioned by name in the "Lancet"?—Yes; and the address was given, 11, Mortimer-street, Cavendish-square.

3638. Is that the address at which you were held up as having sold adulterated bread?—Yes; after that appeared in the "Lancet," I applied to Mr. Wakley, and took with me two gentlemen in the trade for a portion of that bread that he had analysed, to place it in the hands of some analytical chemist to satisfy myself whether there was alum in the bread. I had very great doubts whether there was, and Mr. Wakley refused that favour, but after stating the very great injury it would do to me in a class business, and my friends urging it upon him for some very considerable time, he at last consented that he would give up a portion of that bread for my friends to take to an analytical chemist, and a party was to be appointed on his behalf to accompany them and see the bread placed in the hands of the chemist. He appointed I think the next day for my friends and myself to wait there to have this bread, and in return for the bread I was to give up the samples of the different flours that that bread had been made from. I gave up the flour to Dr. Hassall, as I promised Mr. Wakley, but he declined giving me that sample of bread, and it was the opinion of my counsel that an action at law would be lost unless it was the very same bread that Dr. Hassall had analysed, as an action was then considered advisable on my part. When he refused to give me up the piece of bread I believe he stated something with respect to Dr. Hassall, that he had declined to give up the bread. I think that was the statement he made when I waited upon him for the piece of bread. Dr. Hassall called at my house, but I was not at home, and I received this letter from him: "26, Park-street, November 3d. Dr. Hassall is happy to inform Mr. Clapperton that he believes he shall be able fully to exonerate him from any knowledge of the presence of alum in the bread manufactured by him for the particulars of which D. W. refers Mr. Clapperton to the 'Lancet' of next Saturday. Mr. Clapperton, 11, Mortimer-street, Cavendish-square." It appears that Dr. Hassall had analysed the flour that I had promised to Mr. Wakley for the purpose of being exchanged for the bread, and he stated in the next publication of the "Lancet" that this flour also contained alum, as well as the bread, and as he declined to give me up the sample of bread I could do nothing. I was particularly desirous upon my part to find out whether the flour was adulterated or not. I placed a sample of the flour in the hands of Bachoffner, at the Polytechnic Institution, with instructions to be careful in analysing it.

3639. Mr. Moffatt.] Was that a sample of the same flour?—Yes. After they had made several examinations, they sent for me, and said, "Mr. Clapperton, we wish you to tell us if there is anything that this flour is supposed to contain. We have been very careful in examining the flour, and if there is anything you know that this flour is adulterated with, we wish you to tell us, and we will make a more careful examination." I stated that an action at law would be the result if that flour was pure. They made an examination of three pounds, which was a larger quantity than they had previously analysed, and they said there was not the presence of alum in it at all. As I stated before, the action would have been lost on account of Mr. Wakley not giving up the bread, as the bread which he had purchased at my shop, not having any knowledge that the bread would be required, was all consumed. By Mr. Wakley keeping it in his possession, he took good care that I should have no action against him; that is all I have to say.

3640. Was it before you had had any certificate of the flour being pure that Dr. Hassall declared it in a subsequent impression of the "Lancet" to be mixed with alum?—Yes.

3641. Have you a copy of that certificate?—Yes. "Polytechnic Chemical School. Mr. Clapperton. Sir.—This is to certify that having made a preliminary examination of a small quantity of the flour entrusted to me by you, I felt convinced that nothing decisive could be said unless several pounds weight were employed in the analysis. I have therefore operated in various ways with three pounds of the same flour, and beg to state most emphatically, that it does not contain alumina; therefore the flour may be regarded as perfectly free from any adulteration of alum. I am, sir, yours obediently, M. Pepper. 8th January 1852. I beg to certify to the above statement. G. W. Bachoffner."

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3642. What

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5642. What quantity of flour did Dr. Hassall take to make the analysis?—There was a sufficient quantity, I think two quarters at least; the quantity of flour given up to Dr. Hassall I think was sufficiently large for one experiment.

3643. Have you had any further communication from Dr. Hassall since that period?—No; I considered, not being able to get the sample of the bread, I had lost my clue altogether; I did not interfere any further.

3644. You felt yourself considerably aggrieved?—I have lost my business through it entirely.

3645. Your character was damaged, and your business was very much injured?—It was ruined altogether.

3646. By reason of that report in the "Lancet"?—Yes.

3647. And by reason of not being able to produce the same bread as that mentioned in the report, your counsel advised you that you had no remedy at law?—Yes.

3648. *Chairman.*] Did Dr. Hassall give you any explanation of why, after having stated that he could exonerate you, he published in the "Lancet" that the flour contained alum?—Mr. Wakley refused, when the time appointed to wait upon him came, to give me the bread, stating some objections that had been made, after a consultation with Dr. Hassall; that was the excuse they made, and I could not get it.

3649. You apprehend that it was in order to evade legal consequences?—I have not the slightest doubt of it.

3650. *Mr. Swift.*] Did you make any communication to Dr. Hassall after you received the certificate from Dr. Bachoffner, of the Polytechnic Institution, as to the quality of the flour?—After I found that my action was lost it was useless for me to do anything with them; my remedy was an action at law; having the advice of my friends and the trade at large, the counsel thought I should lose it; it was no use to trouble myself with Mr. Wakley; he met me several times, and he said, "You may depend upon it if the Englishman does not put alum in it the French miller does." That was all the remedy I could get.

3651. *Mr. Moffatt.*] That was no compensation for having your trade ruined?—It was not; there were many as well as myself that might be ruined; that was my case certainly.

3652. *Mr. Kinnaird.*] Are you aware of any other well authenticated case in which the public statements in the "Lancet" have proved to be inaccurate?—No; other people recommended me to carry it on, but I said it would be only throwing away my money as well as my trade.

3653. You have not heard of any similar case to your own?—One gentleman came forward as well as myself, but he withdrew; Davis & Son.

3654. As far as you know, yours was a solitary case of injustice?—Yes. I was the only first-class baker attacked at the time; in the neighbourhood, the position I stood in, supplying so many doctors and families, was very hazardous. Some gentlemen were very sorry to leave me; in consequence of the good opinion they had of me they continued for nine months and then left me.

3655. *Mr. Otway.*] You did not succeed in establishing the fact, that the allegation against you was ill-founded?—I could not, when they held every particle of bread upon which the action could be supported; on no other thing could I have supported the action but the piece of bread that Mr. Wakley had analysed; any bread that I took afterwards would not do; I should have been told, "You would not put alum in this bread, because you knew it was to be analysed." Therefore it was useless for me to try, unless Mr. Wakley would give up that piece of bread.

3656. Have you retired from business?—I have been obliged to retire.

3657. *Mr. Kinnaird.*] On account of the publication in the "Lancet"?—Decidedly; I was baking from 14 to 18 sacks of flour a week, according to the season, and it declined away to four.

3658. *Mr. Otway.*] Did you at any time use alum?—Never.

3659. At no period of your business?—Never.

3660. *Mr. Kinnaird.*] Did you ever use any other adulterating substance?—Nothing at all but the flour and potatoes; I wanted to satisfy myself upon that point; I should not have purchased any man's flour if it contained alum; that was my reason for placing the flour in the hands of Mr. Bachoffner at the Polytechnic Institution.

3661. *Mr. Swift.*] From your knowledge of the trade, could you have discovered

covered whether there was any alum in the flour?—It makes the bread part cleaner. *Mr. A. Clapperton.*

3662. Would you have been able to discover whether there was alum mixed with the flour?—No. 16 April 1856.

3663. *Mr. Otway.*] You might have been using alum for many years without knowing it?—Certainly, if it was in the flour.

3664. In fact, all the time that you supposed you were using no alum at all, you might have been using alum, and probably according to the evidence we have had, you were using alum?—That I cannot say.

3665. *Chairman.*] Dr. Hassall stated that he found alum in the flour?—Yes.

3666. He seemed to think that that exonerated you?—Yes; but it never did; it never took the mark off me.

3667. That was what his intention was; he meant to say that you had been imposed on by your flour-dealer, that you had not done it yourself?—No doubt he meant to exonerate me as far as lay in his power. This gentleman, who dealt with me nine months afterwards, told me that there was alum in the bread. His assistant had analysed it; it was from the fact of having seen it in the "Lancet" his suspicion was first excited. His cook said the next morning that there was alum in the bread; her master had seen it in the "Lancet." I took him every sort of bread I had, but I found he was so whimsical it was fruitless, and I gave it up. I knew very well I had from that day gone backwards, and could not help it.

Veneris, 25<sup>o</sup> die Aprilis, 1856.

# MEMBERS PRESENT.

Mr. Scholefield.	Mr. Sheridan.
Viscount Goderich.	Mr. Kinnaird.
Lord Claud Hamilton.	Mr. Peacocke.
Viscount Ebrington.	Mr. Gregson.
Mr. Moffatt.	Mr. Otway.

WILLIAM SCHOLEFIELD, Esq., IN THE CHAIR.

Mr. John Jackson, called in; and Examined.

3668. *Chairman.*] YOU are a Miller, near Wakefield?—I am.

3669. You know a good deal about the law which affects millers, with regard to adulteration?—Yes; I have had a specimen of it lately.

3670. You have yourself undergone a trial, I believe, having been charged with adulteration of flour?—I have.

3671. The Committee do not want you to go into any details connected with that trial beyond what may be necessary to show to the Committee what the present state of the law is, and how far it is effectual, and what are the remedies which you yourself would propose for making the law effectual and not oppressive. In stating what has taken place, therefore, you will of course be careful not to make charges against persons whom you think may have aggrieved you; the Committee believe they may take it for granted that the trial that you underwent was decided, after a very long investigation, in your favour?—It was.

3672. Your firm was proved not to have practised any of the adulterations with which it was charged?—Yes.

3673. Will you state to the Committee what are the proceedings in the first instance to which a miller is exposed when he is charged with adulteration of his flour; what are the first steps taken by persons in cases of suspicion?—I think

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in our case we were pounced upon in a moment, without the slightest knowledge by the Inspector of Nuisances, under the Nuisances Removal Act.

3674. The Inspector of Nuisances came to your premises?—Yes.

3675. What did he do?—He came into the place and asked what price they were selling such a sort of flour at; he looked in the bins, where it was exposed for sale, and my man told him the price; he said, "What quantity have you of this?" and we said, "We think about 4½ sacks;" he said, "I shall seize it."

3676. Under what authority did he profess to seize that flour?—He has professed all along to have seized it by his own mere motion, having no authority from his employers, the Corporation; he denied all through that he did it by order, but in virtue of his appointment as inspector under the Nuisances Removal Act.

3677. Does the Nuisances Removal Act give power of seizing flour which is believed to be adulterated?—Yes.

3678. You do not know the Act?—I am not very well informed upon that; there appears to be a good deal of difference of opinion whether he ought not to have a written order to summons for penalties.

3679. Do you know the nature of the special Act of Parliament with regard to the adulteration of flour?—Yes.

3680. What are the provisions of that Act?—It appears they have the power to come and examine, and after that seize the whole.

3681. Who has power?—The chief constable, in a case in my neighbourhood, after getting a search warrant, has done it, and he got it analysed, and then confiscated the whole bulk; we had a seizure in our immediate neighbourhood of 317 sacks of flour at one time, but it was not all taken; 300 were given back, 17 sacks retained, and a fine of about 50 l. inflicted.

3682. After the flour was seized, what was the next process?—To bring it before the magistrates; the constable summoned the party before the magistrates.

3683. What was the evidence adduced?—In the case I am alluding to, where the 317 sacks were seized, it was said to be mixed with china clay; there was a portion of china clay intermixed with it.

3684. What witnesses were called to prove that; analytical chemists?—Yes, and the person who seized it; and I believe a discarded miller, in that case at Goole, who had given some information to the constable.

3685. You are speaking now of your own case?—Not of my own case.

3686. What was the result in the case to which you refer?—A fine of about 50 l. This was the article that he was charged with mixing with his flour (*producing a piece of china clay*).

3687. Is this the mixture itself?—That is the article that he was charged with mixing with it; sending through the stones along with the wheat.

3688. What is this called?—China clay; it comes from Cornwall; it is of very fine texture; you will find it is like flour if you squeeze it in your fingers.

3689. In what form was it found, do you know?—I never remember a case of that article being mixed. I never saw anything of that kind mixed during my experience of 27 years, but I suppose they would break it up into small particles, something like the size of wheat, and smash it up with some sort of rolls, and then introduce it with the wheat, and it would go steadily through the stones with the wheat. It would be undiscovered by any person but a miller who knew how to feel the spouts where it is grinding; a miller, who is a practical man, would know by feeling the spout where the flour comes down; there is a little greasiness in it; it is of a soapy feel.

3690. Would that give the character of soapiness to the entire body of the flour?—Yes, in my judgment it would need alum; it would have made the flour very heavy, and no doubt the alum gives it a lift.

3691. Mr. Sheridan.] What do you mean by giving it a lift?—The alum would make the bread rise; that article would make the flour heavy; it would be as flat as paper, it would not rise in the oven; it would very much deteriorate the quality of the bread; it is simply put in to give weight where it is used, but I never saw it used; I never remember anything of the kind.

3692. Chairman.] Is that an article which might be used without being detected by an ordinary consumer?—It might in some districts; it would be a dangerous article to be near a large town; of course it must come to the railway

railway station, and the porters would know the purpose it was wanted for, if consigned to a miller.

3693. Have any persons been charged with using the china clay as an admixture with flour?—Within the last five weeks.

3694. Within what district?—In the neighbourhood of Goole; two mills; one at Goole, one at Snaith.

3695. Mr. Peacocke.] Is that in Yorkshire?—Yes.

3696. Mr. Sheridan.] What is the price?—About 18 s. per ton.

3697. Chairman.] In that ground state?—Just in that state.

3698. Lord C. Hamilton.] Where does it come from?—St. Austel, in Cornwall.

3699. Chairman.] It is found in the rock in that state?—No; it is filtered through fine sieves; it is natural clay worked up in water, and ground very fine, and then filtered through fine sieves, and allowed to settle as a sediment in pits, and then dug out and sent to the part of the country where the potters use it.

3700. Persons have been charged with selling flour mixed with this china clay?—Yes.

3701. What was the result of the charge?—The constable, in that instance, seemed to be the party who the magistrates relied upon, and he got a conviction; one of the chemists who analysed it said there was none in a great portion of the flour, and the assumption was that the constable had put it in in order to get a conviction.

3702. The magistrates did not take that view of it?—They did not.

3703. Mr. Sheridan.] Was the clay found in this state in the mill?—Yes, a small portion was found in the mill; there was not twice as much as the piece I have produced found in the mill, but the report was that a portion was carried to the railway station at that town, and was supposed to be for him, which was disowned; the miller himself said it was not; I have had him at my house since our trial was over, and he declares his innocence.

3704. Lord C. Hamilton.] Was any owner found for that clay afterwards?—I did not hear the end of it; it is about 50 miles from where I live.

3705. Mr. Peacocke.] Do you know under what Act of Parliament those proceedings were taken; is it the Act of Will. 4?—It is that portion that says, that no matter of this kind shall be found on the premises of a miller.

3706. What was the bench before whom they obtained their conviction; was it a borough bench or a county bench?—It was one of the West Riding magistrates.

3707. Lord C. Hamilton.] Though you do not know all the circumstances, you are quite sure that there was a quantity of this clay found at the railway station, and no person, after this investigation had taken place, would own it?—I am not certain that it was found; I heard this from the counsel who defended him before the magistrates; he said there was such an article at the station.

3708. It being disowned, proves that whoever was the party concerned, probably bought it for an improper purpose?—I cannot see that; it was in the line of transit to where it is legitimately consumed—Knottingly Pottery. There are beyond Goole several potteries; this article I fetched from the pottery last week just to look at it; I thought I might have a sample to show the Committee here.

3709. Mr. Sheridan.] What was the adulteration with which you were charged in your case?—I had 12 informations against me; adulterating with sulphuric acid, lime, and magnesia was the first charge, under the Act of William, they went through all that; we had a very tedious trial; it was adjourned three times, and the prosecution had Dr. Letheby from London.

3710. There was no charge that you used china clay?—No.

3711. Lord C. Hamilton.] I understood you to say that this party seized all that he found upon your premises?—At Wakefield, they seized every ounce that we had on the premises.

3712. Did he, before making that seizure, ascertain that it was all of the same quality?—No; he took no pains whatever to do so; he simply just looked at two sacks, and then seized 85 others, without ever looking to see whether they were full of beans, peas, malt, or oats, or anything.

3713. Did you, for your own protection, insist upon having a sample, so that you might be able to justify yourself, by showing that when it was upon your

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premises it was not adulterated?—I was, unfortunately, six miles off, and my man had not the caution to do so the first time. They seized upon two separate days; they seized on the 25th of February and on the 26th they made a final seizure of everything we had; on the second day my man jumped on to the waggons, and cut holes in every one of the sacks; we had five sorts of flour; we knew them by a certain mark which we had on the string of the sack; my man jumped on to the waggon, and cut a hole in the centre, and took samples out of every class, which he preserved as evidence, for us to send to London to be analysed.

3714. Did the result at the trial of the examination of those samples tally with what was stated in the accusation against you?—No, not at all; they abandoned adulteration after the first time, and returned us 82½ sacks of flour back.

3715. *Chairman.*] I need scarcely ask you whether, after the experience you had in that trial, your opinion is, that the present state of the law is not satisfactory; at all events as regards the millers?—Not at all; it is a very grievous position for an honest man to be put in.

3716. Although you think the miller is in a disadvantageous position, you are not of opinion, I presume, that the miller should be left to do what he pleases, without any interference?—I think it is necessary to have a moderate inspection of mills as a protection to upright and honest men.

3717. Mr. *Peacocke.*] What do you call a moderate inspection?—I think there should be a very competent and intelligent man in the district that should inspect the mills at any hour he chooses, either night or day. Many of the mills in our part of the country do as much at nights as days; there is a relay of hands, and the mills go on with great vigour the entire of the night; the mills of Yorkshire and Lancashire.

3718. Mr. *Sheridan.*] Your objection is not so much to an inspection as to the men who generally inspect?—No, I think it would be a great advantage and satisfaction to the country, and even to the public, and would do away with such exhibitions as we had at Wakefield. It all happens at the mill; even alum cannot be intermixed properly anywhere so well as at the mill. If the mills could be made pure, I am persuaded that the community could have a pure article.

3719. Mr. *Peacocke.*] Are the Committee to understand you to say that you believe the alum with which the flour is adulterated is generally mixed with the flour by the miller?—Yes, mixed in the wheat, and ground with it; it cannot be mixed properly, so that it is undiscoverable, without it is ground with the wheat in useable proportions.

3720. It would be lumpy if the bakers mixed it?—They can dissolve it in warm water, and use it that way, but they cannot put it in that way, in proper quantity, to be useful, to give a good appearance to the bread, and make the bread very comby, and nice, and light, and give a little better colour to it; it must be ground with the wheat; an inferior class of wheat can be used where alum is permitted.

3721. You mean that the adulteration with alum must be done by the miller?—Yes, to put the quantity that is undiscoverable, and give a better appearance to the flour.

3722. Mr. *Sheridan.*] Did you say that you grind no flour at your mill which is not adulterated with alum?—We do not use any alum; we do not use anything but pure wheat.

3723. *Chairman.*] You are speaking of the way in which alum may be mixed with the flour?—Yes, and has been mixed by many millers.

3724. Mr. *Peacocke.*] In your neighbourhood?—In all parts of Lancashire and Yorkshire they have used it steadily for the last, say a dozen years, before the conviction at Bradford, Yorkshire, I referred to. It was never known until about a year and a half ago, that the Act of Parliament allowed the seizure of the whole property; then it became very dangerous, when they could take a thousand quarters of stuff away in waggons, in the manner they did from my place; that is the alarming part. If there had been nothing but the disgrace, and the fine of 10*l.*, I do not think the matter would so easily have been put an end to, as it appears to be in our part of the country.

3725. *Chairman.*] Do you think the excessive stringency of the law has tended to produce an effect upon the minds of the millers, and to induce them to

to sell pure flour?—There is no doubt that the fear of an immense seizure taking place, as it might in some instances to the extent of 5,000 *l.* or 6,000 *l.*, has quite upset it.

3726. Do you think if it had not been for that very severe course the millers would have been willing enough to pay the fine, and go on adulterating their flour with alum?—I think some parties would, if it had not been for the fear of seizures.

3727. Mr. *Peacocke.*] Do you consider that fine and exposure would not be a sufficient check upon adulteration?—Not upon some millers, men of not first-rate character; small millers.

3728. In many cases fine and exposure would not be a sufficient check, you think?—No; I think it would not in some districts.

3729. *Chairman.*] Have you thought what course it would be advisable to take in order to check adulteration?—I think it would be necessary to inspect mills, and give a sort of report continually; I think the mills should be inspected very frequently.

3730. Mr. *Sheridan.*] To what do you object in the present inspection?—It is by men who do not know flour scarcely from that stuff which I have placed before the Committee.

3731. Do you object to the inspection, or to the individual who carries on the inspection; the person generally employed is the person you object to?—Yes; under the Municipal Acts, inspecting flour has become a portion of the office of the inspector of scavengers. Under the 26th section of the Act of last Session, the inspector of nuisances is the man who inspects butchers' meat, and he knows nothing about flour; yet he is the inspector of all those things; at his own mere motion, he goes where he chooses; he has a sort of roving commission in the instance of Wakefield.

3732. Viscount *Ebrington.*] Under the Act one and the same person is employed to inspect and to report upon defective drainage, upon diseased meat and upon adulterated flour, and other food?—Yes.

3733. And it is your opinion that some properly skilled inspector should be employed to inspect at any rate that part of trade in which you are engaged, namely, flour?—Yes; flour is a very large article; for instance, in Wakefield there is one miller who grinds 3,000 quarters of wheat a week; it would require a skilled man to look after it; a man who was fully competent in his knowledge of wheats; he ought to know the class of wheats, which the present inspector cannot be supposed to know; he does not know Egyptian wheat from Spanish wheat, and he would not know English wheat from Baltic wheat. I think, to have a proper inspector, he ought to be a discreet, clever man, who has a full knowledge of all classes of wheat, and who could tell at once by going to the spouts in the corn mill what was going forward; he would know where to go to, and by a feel with his fingers to look for anything he suspected was coming down that spout.

3734. In short, instead of employing one and the same inspector to inspect nuisances and adulterations of all sorts in one place, you would rather have a number of different inspectors inspecting the same sort of adulterations with which they were thoroughly acquainted in different places?—It must be so to be effective and not oppressive, to carry out the wise intentions of the Legislature. It would not do for a chemist to examine wheat; a person who would be a proper party to look after drugs would be quite an ignoramus in looking after wheat.

3735. What is your opinion as to the best mode of procuring adequate inspection at a moderate cost?—I think it would be very possible for a moderately clever man to look after a very large district. With one or two subordinates, he could take the whole of those two counties of Lancashire and Yorkshire, and come unawares upon any miller he suspected. Those that were not suspected, would be very much alarmed to find him knock them up at midnight; he ought to have the power to enter the mills at any hour of the day or night. In one instance of conviction that we have had in the neighbourhood of Wakefield and at Pontefract, they ground the alum at night, and they intermixed it in the dressing in small portions when nobody observed them.

3736. But you object to imposing upon one and the same man the inspection of all sorts of different nuisances and adulterations?—Just so; the man who

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takes so many things in hand, accomplishes nothing well; you had better give him a wider district and confine his inspection to that one line.

3737. You think that system might be adopted, notwithstanding the objections which might be taken to it on account of its interfering with the absolute power of municipalities within their particular area of jurisdiction?—I think you might deprive the municipal corporations of the inspection of flour, and let the inspector-general, as you might call him, with his subordinates, scour the entire country for a distance of 100 miles round; there is no miller, either great or small, who would attempt to adulterate if there was an active and efficient inspector-general appointed, with two or three subordinates that he could send at any hour of the night.

3738. Would you apply the same principle to the inspection of drugs, with which you are not acquainted, and to the inspection of meat, with which you are not so immediately acquainted as with flour?—I think the meat might be left to the inspector; for instance, at Leeds I once was a member of the town council there, and we had a very intelligent inspector, a butcher; he was a very clever man, and he did not make it oppressive, but he detected bad carcasses very acutely. I think a butcher is the best man for meat inspection.

3739. Do you think in each case it ought to be a person thoroughly and specially understanding the particular class of adulteration or the nuisances which he is called upon to inspect?—I think it should be.

3740. Do not you think that in the case of small municipalities the having a separate inspector for meat, and again for drainage and nuisances, would be a very heavy expense?—No. I do not know whether the drainage comes fairly within his province; for instance, such a man as they have at Wakefield is a very illiterate kind of person, and he would understand very little about drainage; he understands meat best; he is an ex-butcher.

3741. Lord C. Hamilton.] Would you propose to add to the duties of such an inspector the charge of examining the flour on the premises of the bakers, and also their bread?—I think that person would not be competent to judge as to flour; it is very difficult to discover alum even by good judges when it once becomes well mixed in the flour at the mill.

3742. Would you include the stock of flour on the premises of the baker?—No. I do not think that the same man would be competent for that, and to understand the classes of wheat. Under the Nuisance Removal Act a very serious case might arise; for instance, wheat might be taken away by an inspector; 1,000 quarters of wheat might be landing from ships at Wakefield from Egypt; that class of wheat comes sometimes in a very heated, filthy state, and it requires to be got out of the vessel quickly; it is so hot that it would roast eggs; but after it has been exposed to the atmosphere in good warehouses it comes back to its natural condition and makes very excellent flour intermixed with English wheat, and it has rendered very good service to this kingdom. The inspection of wheat would be managed by the inspector of mills in the most efficient manner, because he would know the class of wheat which he would allow to be landed; very great injustice might be perpetrated on a party by an ignorant inspector seizing his wheat and putting him to great expense.

3743. Mr. Peacocke.] Were those convictions which you speak of obtained on the single evidence of the inspector?—No, on the evidence of the chief constable and a clergyman.

3744. On his evidence alone?—No; he appeared to be the prosecutor.

3745. On his evidence alone or not; were there other witnesses?—I almost forget whether there was any other evidence; there was the evidence of a clergyman at Wakefield.

3746. Do you know a single case of a conviction being obtained on the single evidence of the inspector of whom you speak?—No, I think I do not.

3747. Those convictions were obtained, were they not, on the evidence of analytical chemists, who were called in, as you say, from London?—Not in that case of conviction, he was not a chemist; he was a clergyman, Rev. W. R. Bowditch.

3748. But I think you also said there were other convictions obtained on the evidence of analytical chemists?—In the neighbourhood of Goole there were.

3749. On the evidence of Dr. Letheby, brought down from London?—There was no conviction when Dr. Letheby was called in, that was my case.

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3750. That person got off?—Yes, entirely; in every instance; upon all the various samples.

3751. Chairman.] The evidence of the clergyman was scientific evidence, was not it?—He professes to be scientific.

3752. Is there anything else you wish to state to the Committee?—There is another part of the Act of William, which is very stringent as to the mixing of peas or beans; the question is, whether that is not a power that is unnecessary.

3753. You mean to say, that forbidding the mixing of peas and beans, you think is an unnecessary enactment?—I think it is; there are times, as for instance in 1847, when the wheat is a little tender and a little sprouted, that a few fine old beans will not injure the flour, but rather do it good and strengthen it.

3754. If you gave permission to make that mixture, do not you also open the door to a great deal of fraud?—I cannot see that there is any fraud in that; the people are judges of flour; if you put too much it would spoil the colour; the public look at colour and flavour.

3755. And you think the public know whether flour is perfectly pure, or whether it is mixed with bean or pea meal?—Yes, it would soon be offensive; it would smell strong in the oven; it would not do them any harm.

3756. You would be disposed to repeal that part of the Act of William?—Yes. I do not know that it is any particular advantage to the millers, but I think it may be useful sometimes, for instance, in a year of rain, after the harvest almost every sample of wheat is a little sprouted, and in those cases it would almost run out of the oven, as it is called, with tenderness.

3757. What is the difference in the value of those meals as compared with wheat?—At present good wheat is worth about 66 s. a quarter, and beans, which are four stones per quarter heavier than wheat, are worth about 46 s.

3758. They are cheaper?—Yes.

3759. Viscount Ebrington.] Beans are always much cheaper, are they not?—When wheats were very low, at the time when they were 5 s. a bushel, then beans were nearly as high.

3760. Mr. Moffatt.] You would not propose the introduction of bean flour in so large a quantity that it would make any material difference?—No.

3761. You would simply propose that there should be permission given to introduce bean flour as an improvement of wheat flour under certain conditions?—Yes; the Act of Parliament also forbids the use of barley, and you cannot intermix one grain with another under that Act without being liable to have the property seized. In my own case Professor Taylor, of Guy's Hospital, was required by the West Riding magistrates at Wakefield to inspect the flour by microscope, to discover pea and bean flour, and in that instance he declared in his analysis to the magistrates that he sought very carefully for pea and bean flour, but there was none. I was charged in 12 informations, all given at one time, with adulterating with sulphuric acid, lime, and magnesia, and a mixture of peas, beans, barley, and various things. Now, fine barley has been very useful during the last year, when wheat was so high; barley has been ground, and a little barley with the wheat has lengthened the quantity very materially, and has been of great service to the community, and made the price of wheat much lower than it would have been; there have been many thousand quarters of barley used last year; a little fine barley mixed with the wheat is an advantage, and we thought people knew it, and had no objection to a little fine barley intermixed with the wheat.

3762. Chairman.] Are you of opinion that it would be advisable to let the millers mix those grains with wheat?—Yes, it will correct itself; if you put too much you spoil the colour of the flour with the barley.

3763. Is there any other admixture you would permit millers to use?—No.

3764. Would you permit the use of alum?—No; alum is a troublesome thing to a miller; his men may spoil a large quantity of flour with neglect of the machinery that mixes the alum; it wants to go in very carefully, and if he was to get too much it is a great risk to the miller; it imposes an immense anxiety on him to do it properly. I was always opposed to it, but at last I found that the Lancashire parties would not have our flour without it had a little alum in it, and if we wanted to compete with our neighbours we must either use it or discontinue the Lancashire trade.

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3765. Viscount *Ebrington*.] You are aware that beans and barley are extremely nutritious and perfectly wholesome?—Yes.

3766. You are also aware that alum contains no nourishment at all?—None whatever.

3767. Do not you conceive that that makes an essential distinction between the use of the two articles?—Yes, no doubt of it.

3768. Mr. *Peacocke*.] With respect to those convictions which were obtained, were they obtained before borough magistrates or county magistrates?—In borough matters the borough and county magistrates act together at Wakefield, and in county cases none but West Riding magistrates act.

3769. Do you know of a single conviction that has been obtained before a bench of borough magistrates only?—Yes, at Pontefract, I do.

3770. Were there no county magistrates there?—No.

3771. Are you sure of that?—I think there was not; I cannot speak positively.

3772. *Chairman*.] Is there any other point upon which you wish to give evidence?—It struck me that it would be a very dangerous experiment if the inspector at Liverpool was to commit such a mistake as the inspector at Wakefield did; he took even the small quantities in the sack bottoms, three or four stones, and they had everything to yield up and bring it all back. It would have been a very grievous thing if the inspector at Liverpool had committed the same mistake as the inspector at Wakefield did. Suppose he had seized a ship load of American flour; it comes in large quantities and is sometimes very warm; it is put on the quay for a couple days, and then the American flour, which is in barrels, becomes a very fine quality and will keep well for two years after that, whereas if it was taken by the inspector at Liverpool at the moment it came from the ship he might declare that it was unfit for human food, and he might confiscate a large quantity, say 10,000 *l.* worth of flour, and get a conviction. I think if that were to happen with an American subject at Liverpool, it might create more uneasiness with the Government than the case at Wakefield did.

3773. You think the power is much too large?—Yes; I think they might take a smaller quantity, and be positive that it is adulterated, before they act; it requires great deliberation to prevent committing such mistakes, because they make themselves a laughing-stock to the general public. The exhibition at Wakefield caused thousands of people to assemble in the streets to laugh the authorities to scorn for the very insignificant manner in which they had acted.

Mr. *Emil Richter*, called in; and Examined.

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3774. *Chairman*.] YOU are a Doctor of Philosophy, are you not?—Yes.

3775. Under a German diploma, I suppose?—Yes.

3776. And your present occupation is that of a manufacturing chemist?—I am analytical and managing chemist to Messrs. Savory and Moore.

3777. You have had a good deal of experience, I believe, in Germany as to the state of the law affecting drugs and medicines?—Yes.

3778. Can you give the Committee any information as to the state of the law in Germany with reference to the inspection of drugs and medicines, and its effects upon the purity of those articles?—I believe about thirty or forty years back pharmacy in Germany was in the same state as it is now in England; but by applying a proper law and by bringing pharmacutists into the highest state of education, and by superintending chemists' shops, I believe we have almost conquered the adulteration of drugs. We make chemists keep proper medicines, and allow them, on the other side, a proper profit.

3779. In what way do you compel them to keep proper medicines?—Before we know what we have to keep, we must have a book according to which we have to work; that book is the pharmacopœia. Every German chemist is bound to work according to his pharmacopœia, and only to have the drugs which are recommended in the pharmacopœia. A person who is to be apprenticed to a chemist in Germany has to pass an examination, in which he has to show that he has had a liberal education with regard to classics, mathematics, and natural philosophy, and after he has passed that examination, he may serve his apprenticeship. As an apprentice, he is educated both practically and theoretically

theoretically, and then he has to pass another examination to show that he has acquired such knowledge as will enable him to judge of medicines, and to combine medicines. Before he passes the second examination as an assistant, he is not allowed to prepare medicines but under the inspection or under the superintendence of the principal, or of an assistant who has already taken an oath to adhere to his pharmacopœia. After he has shown in this examination that he is qualified to judge of medicines, and to combine medicines, he has to take an oath that he will obey the medical laws of the country, and that he will look up to the pharmacopœia as his principal rule; that he will work according to his pharmacopœia, and only according to his pharmacopœia. After this he is obliged to serve a certain time, not less than three years, as an assistant, and then he has to pass the last examination, which entitles him to keep a chemist's shop; and he has to take a second oath, by which he promises to obey the laws of the country with regard to medicines. If it would be of any assistance to the Committee, I shall be happy to translate those laws from German into English, and lay them before the Committee. It is a short document, which comprises almost everything on the subject. We have laws for selling poisons, and we have laws for selling physic; we can only do it under certain regulations, and, of course, if we act against those regulations, we commit ourselves, having broken our oath; but, on the other side, the Government grants us protection. The prices of medicines are fixed by Government, and a reasonable profit is allowed; no chemist can oversell or undersell another. Every year, I think once or twice, generally speaking once, the wholesale trade is consulted with respect to the prices of the articles, and a committee is appointed to give chemists and druggists a fair profit.

3780. Do you think such a system would be applicable in England?—No.

3781. Is the effect of the series of arrangements in Germany which you have described, to produce a pure state of drugs?—Certainly.

3782. There is no temptation to adulteration?—No; the Germans have very little to be proud of, but I think that is one of the things of which they have a right to be proud.

3783. Viscount *Ebrington*.] Can you tell the Committee whether you think any part of the German system, and if so, what part of it, might be applied to this country, judging from your own experience and what you have seen and know of this country, its institutions, and its people?—I think a great deal of the German system might be applied to this country with good results, and it would not meet with any resistance on the part of Englishmen; for instance, I would put the young chemists and druggists, as we have done in Germany, under the highest state of education that they could possibly attain; the more you educate a man, the more like a gentleman he will always act. I do not believe there is any law in the world that would protect us against adulteration if you do not kill the germ of it in the first instance.

3784. *Chairman*.] Is not that to some extent being done in this country through the means of the Pharmaceutical Society?—Yes.

3785. You believe that to be an important institution?—I believe it to be an important institution; I believe the Pharmaceutical Society has done a great deal of good, together with the Press. I believe "The Times" has done quite as much good as the Pharmaceutical Society.

3786. Viscount *Ebrington*.] And the "Lancet"?—Yes. I do not wish to trouble the Committee by referring to the different adulterations upon which they have already had evidence; a great many adulterations take place; some have been exaggerated and some not, but I believe there are adulterations which ought to be checked, and I believe the Legislature ought to interfere.

3787. By what means do you think adulteration could be checked in this country?—In the first instance, you would have to survey the chemists' and druggists' shops. I do not believe that could be done without a system of licensing, and the money paid for licences would defray part of the expenses of maintaining a board of examiners or a board of inspectors, whatever you may call them. Those people who cannot afford to pay the money for being educated, and who cannot pay for a licence, do not deserve to be chemists. If you licensed chemists and druggists, you would have a check upon them, and you could say, every apprentice you take you are compelled to educate properly; if you cannot do it yourself you must send him to the Pharmaceutical Society. Of course we do not want you to send him to the Pharmaceutical Society if you

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can prove that you are able to educate your apprentice properly. Let it be shown that a man deserves the name of a chemist and druggist. It is no great credit to have the name of a chemist and druggist now in England, but I hope it will be better.

3788. Would you not, by the system you propose, give those licensed chemists and druggists the protection of a monopoly in the sale of drugs and medicines by retail?—I am afraid you could not start any monopoly in England; you would license them only as a means of check to enable you to see what chemists and druggists were doing, and to see that the public is guarded against fraudulent adulterations.

3789. At any rate, you would forbid any one taking the title of chemist and druggist, and professing to prepare and sell medicines without having this licence, which licence should be contingent upon the person having passed a proper examination?—Most decidedly. I would not act too severely in the first instance, because you would by that means excite so much opposition, that perhaps the plan would fall to the ground. You must try to bend, not to break. Of course, there are many old chemists and druggists who must die out before such a plan could be matured; you must not try to remove them abruptly, or you would incur a great deal of resistance. If they were licensed, you would have a check upon them. Let them first be educated, and do not allow any one to act as an assistant who has not passed an examination. If there were inspectors to examine the shops, they could also ascertain if the persons employed were duly qualified, by making them produce their certificates giving a right to the title of a chemist and druggist. Then, of course, you ought to have the power to superintend the chemists' shops. I would not make a punishing power of it, but I would make a correcting power of it. Mr. Wakley said, very correctly, that you ought to have superintending power, but perhaps he was too severe in saying that people who sold bad articles should be placarded in all the public thoroughfares; perhaps they are often not so bad as they may be supposed to be. I do not believe it is a proper plan at all to go into a chemist's shop and take away an article to examine it. A man having anything condemned may then say, "Come and examine my shop; you will find my articles pure. I do not know how this has happened." I would appoint proper inspectors, and let those inspectors do their duty. You have about 1,200 chemists' shops in London; appoint for these 1,200 chemists' shops six inspectors, and let every inspector examine about 200 shops in the year. Let him go from day to day to the chemists' shops; not to take articles away from the chemists, but examine them in the presence of the chemist, on the premises; you can soon see from the appearance of the man, and if his shop is kept clean and in proper order, how he is conducting his business. Supposing you send to a shop to purchase sweet spirit of nitre, and you find that it is of a too high specific gravity of acid, you would say, "It is spoilt; it is a bad article; you must placard this man; he sells a bad article." You are quite right in saying that he is selling a bad article; but perhaps the man has not been properly educated, and he has kept his sweet spirit of nitre bottle upon a top shelf, in a hot place, where it would be decomposed. The inspector should not punish him for such a mistake in the first instance; he should say, "You must keep this in such and such a place." It is quite another thing if a man adulterates fraudulently. I would appoint inspectors specially for chemists' shops. You might perhaps use the Excise officers to inspect grocers, bakers, millers, and all other branches of trade, but you ought to have proper people to inspect chemists' shops; you ought to have gentlemen who know how to judge of drugs, and who know how to examine them quickly. A great deal depends upon the routine of business: I have seen a chemist's shop thoroughly examined in a day and a half, and I am quite sure there was nothing in it that was not properly examined.

3790. Have you ever turned your attention to the means that would be most available for the inspection of chemists' shops in the country and in provincial towns?—Of course you ought to have some more inspectors, because the district is larger, but you might do it in the same way that you do in London. I believe there is a great objection to a central Board, but you might have several local Boards. I do not believe that the expenses would be very much; say, for instance, you have 1,200 chemists in London, and every one pays 1*l.* yearly for a licence, which is not too much for every one to pay, that will give 1,200 *l.* a year.

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If a chemist takes an apprentice he has a premium with him, and other advantages, and he can afford to pay 5 *l.* for that apprentice. Supposing there are only 100 apprentices taken annually by chemists in London, you would obtain from that source 500 *l.*; the 1,200 *l.* for licences, and 500 *l.* for apprentices, make 1,700 *l.*; and if you pay the six inspectors 300 *l.* each, it would cover the expense within 100 *l.*

3791. *Chairman.*] Is there any law in Germany as regards the importation of drugs?—There is not.

3792. Drugs may be imported into Germany in a very impure state?—In a most impure state; I believe it is of no consequence at all to deal with any one but the person who sells them. If you inquire of the importer or wholesale druggist, you might be referred to Egypt or Turkey, to parties there. The man who sells the article ought to know what the article is made and what it should be of, and I would make him alone liable for what he sells.

3793. *Viscount Ebrington.*] May not many valuable preparations be extracted in perfect purity from very impure drugs?—Most decidedly. You could not measure the limits to which it would injure England to prohibit impure drugs being imported. Take, for instance, bark; bark might be quite mouldy and unfit for medicinal purposes as bark, but the quinine manufacturers will manufacture quinine from it. Opium may be sold, because it is damaged, at a very low price, and still to the manufacturer of morphia it may be worth more than opium that bears even a higher price.

3794. What you wish to secure is purity in the articles which are administered to the public?—Certainly; if a manufacturer chooses a bad article which does not answer for his manufacture, he will find out his mistake, for he cannot sell it afterwards. Because if you make the people answerable who sell the articles, they will not buy anything but what they can sell. Of course, you should not be too severe in the first instance, because we must go through a state of transition. If you take, for instance, physicians, I do not believe there are greater medical men than the medical men of England; and what is the reason of it? Even as late back as 1511, the College of Physicians has been established, and they have had good time to organise themselves. If you only give Pharmacy 50 years or less, it will be quite as far advanced. What is a physician if he has not a good chemist? I believe the importance of having a good unadulterated article is not half enough thought of. You may have the best physician, and if he prescribes a pure article, and you get a bad one, he is of no use at all.

3795. *Chairman.*] Is there any other suggestion which you wish to make to the Committee?—I wish to draw your attention to the fact of there being three different Pharmacopœias; there is the London, Dublin, and Edinburgh Pharmacopœias. Those three Pharmacopœias ought to be abolished, and you ought to have but one. It has been stated before this Committee that if you take a solution of morphia at one place, you get it as strong again as you do at another; the same with respect to prussic acid, and so forth, almost throughout, in less degrees of difference.

3796. Do you look upon that as a great evil?—I look upon that as a great evil; it would not be such a great evil on the Continent, because the people there do not travel so much as they do here. An Englishman in a week's time may take three different strengths of the same medicine.

3797. *Mr. Peacocke.*] Does the standard of strength differ much in the three Pharmacopœias?—Very much.

3798. Therefore an English prescription cannot be safely made up in Ireland, or *vice versa*?—It might or might not; there is a great difference in the solution of morphia and prussic acid.

3799. *Chairman.*] In one country the admixture would be dangerous, and in the other perfectly harmless?—Certainly.

3800. *Mr. Peacocke.*] Which Pharmacopœia gives the strongest mixture?—I think the English Pharmacopœia gives as much morphia again as the Dublin, and the Edinburgh gives as much prussic acid again as the London. I am obliged to work according to the London Pharmacopœia; that is my rule.

3801. Do you think that the London Pharmacopœia should be applied to the three kingdoms, or do you think that a revision of the whole would be necessary?—Yes, a revision would be desirable and the standard should not be such as is impracticable, which the present frequently is.

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3802. Viscount *Ebrington*.] Is there a greater uniformity in the Pharmacopœias on the Continent?—There is; but the Pharmacopœias still differ. There has been a great deal spoken and written on the subject, and we are in hopes that we shall have one Pharmacopœia; but from the year 1848 the political movements have put it aside.

3803. You look to some congress, such as that which met with regard to statistics and the classification of diseases, directing their attention to the unity of Pharmacopœias throughout the civilised world?—Yes. There is another topic upon which I wish to say a few words. I think it was Dr. Nelligan who mentioned about poisons being kept in proper bottles; when Mr. Bell was here the question was put to him, and he justly observed that a rule not properly kept was worse than no rule, but there is no reason why we should not keep a rule. I see from the "Times" paper, that another accident has occurred, and in my practice it very frequently happens that a gentleman or a lady will come to me and say, "I have taken something out of a bottle; I do not know whether it is poison or not; will you analyse it?" Several things have been proposed, and Mr. Savory has settled upon having a particular-shaped bottle, and he has employed some of his bottle merchants, and I think they have succeeded very well in the bottle which I will show the Committee (*exhibiting a bottle*). In Germany we keep poisons, not in peculiar-shaped bottles, but in peculiarly-marked bottles; and poison is never sent out in more than a necessary quantity; but here, where people can buy poisons in any quantity, it is necessary that they should be made as difficult to get at as possible. This bottle, which has been made for Mr. Savory, is so constructed that the discharge of its contents may be regulated to a drop.

3804. You think it would be safe if poisons were kept in such bottles?—Yes; I have had a great deal of practice. I think it is a very good plan indeed.

3805. Mr. *Peacocke*.] A suggestion has been made to the Committee that potions should be kept in one shaped bottle, and external applications in another; do you see any objection to that?—No; I do not see any objection to it. But a poison may be ordered to be put in a medicine, and a few drops of it would be a proper dose and give relief to the patient, whereas a large quantity will kill him. Now it may happen that a careless assistant, in preparing the medicine, will pour in a few drops too much with the present bottle; but if you have a bottle like the one I have produced, it operates as a double check; in the first instance, the assistant knows by its peculiar construction that it contains poison, and in the second, he can regulate it to a drop.

3806. Mr. *Moffatt*.] To what portion of Germany does the evidence which you have given, with regard to the system of inspecting chemists' shops, apply?—With a little modification, it will apply to all Germany, with the exception of Austria.

3807. Is there throughout the whole of Germany one standard pharmacopœia?—There is not; different parts have different pharmacopœias. As I have observed, we are endeavouring to have those different pharmacopœias abolished; they do not differ so materially as yours do.

3808. Is this system recognised and agreed upon by all the states of Germany, with the exception of Austria?—Yes, there are several modifications; but in point of fact, they come to the same thing.

3809. The same principle obtains in the kingdom of Prussia as in any one of the small German duchies?—Certainly.

3810. Only the pharmacopœias differ?—Some of the smaller states use the Prussian pharmacopœia.

3811. The same principle of administering oaths to the vendors of drugs, and the same system of inspection, obtains?—Yes.

3812. And the same system of government fixing the prices at which the drugs are to be sold?—Decidedly.

3813. Can you inform the Committee upon what principle the prices of the drugs are fixed?—I think the vendor of the drugs is allowed 50 per cent. or thereabouts.

3814. Upon the prime cost of the drugs?—Yes, when mixed according to a prescription; otherwise he can make his own charge.

3815. How is the prime cost of the drugs ascertained?—The prime cost of the drugs is ascertained from the principal importers.

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3816. The value of the drugs is obtained from the principal importers, and the average is struck upon which the government tariff for each State is fixed?—Yes.

3817. That is in reference to all drugs that are imported?—With reference to all drugs grown and imported and chemicals manufactured. We have no drug-brokers in Germany, as you have in England; we have wholesale druggists, and some of the most respectable houses are asked to send in lists of prices.

3818. Do the wholesale druggists send in lists of prices at which they are willing to sell the drugs?—Yes.

3819. Upon that a profit is allowed to the dispenser of the medicines to the public of 50 per cent.?—The average is about 50 per cent.; some are much more, and some are much less; 50 per cent. would be a very poor per-centage upon such an article, for instance, as musk, and those things which are used in small quantities.

3820. What is the penalty in case the vendor chooses to charge more than 50 per cent.?—It may go so far as to take away his licence. I cannot give you by heart the different penalties, but you will find them in the law which I shall translate for the Committee.

3821. What would be the result in case the vendor elects to sell his drugs at a less profit than 50 per cent.?—He would be punished.

3822. If the vendor elects to sell those drugs, considering 50 per cent. to be a too excessive profit, at 25 per cent. profit, what is the consequence?—He would be punished.

3823. Did you say that that was a system of which Germany had reason to be proud?—No; the Chairman asked me to give the Committee an idea of the state of things in Germany; different countries have different customs; there are reasons why we should have such a law in Germany, and there are reasons why you cannot have it in England. I do not say that we are proud of paying 50 per cent., but we are proud of a system which prevents people from being poisoned. In Germany a chemist is looked upon as a man of integrity, and he is very frequently made a magistrate or placed in a high post of honour where integrity is required.

3824. That is the vendor of drugs?—We do not call him a vendor of drugs, we call him by a name similar to your apothecary, but he is not allowed to practise.

3825. Assuming that he is a man of very high standing and position, do you think that the oaths which you have mentioned as being constantly administered to him are necessary to bind him to a course of integrity?—I think the oath affords an additional guarantee. They are not all men who would be bound by a moral restraint only.

3826. Mr. *Peacocke*.] Does not it appear that the vendor of medicine in Germany is sufficiently bound by the rules and regulations you have named, and by having the exact sum prescribed for him at which he is to sell his medicines, without swearing him in addition?—Perhaps we think a little more of an oath in Germany than you do in England; if a man swears an oath, he means to stick to the oath. We administer the oath to make a man keep those rules and regulations.

3827. Mr. *Moffatt*.] Is it your impression that the English are comparatively indifferent to the solemnity of an oath, and its binding character upon the man who takes it?—I cannot enter into the question as to how an oath is observed in England; it does not belong to my branch; it belongs to the clergyman and the lawyer.

3828. You have made an assertion that an oath is regarded with much more sanctity in Germany than in England; what are your reasons for making that statement?—Because you see many more people convicted for having taken a false oath.

3829. In England than in Germany?—Yes.

3830. *Chairman*.] Your impression is, that oaths are rather more lightly taken in this country, from what you know, than in Germany?—Yes.

3831. Mr. *Moffatt*.] I think you have stated to the Committee that the germ of adulteration was ignorance?—I do not believe I stated that the germ of adulteration was ignorance; I said that adulteration should be checked in the germ.

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3832. And

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3832. And that the germ you believed was mainly the ignorance of the goods that the man was dealing in?—Ignorance might be pleaded as an excuse, but I do not believe it is ignorance in many cases.

3833. You believe that the germ of adulteration really is fraud?—I believe it is; I will not say that it is always fraud; it is often to suit the fancy of the customer, who prefers something made otherwise than the pharmacopœia directs, but that is very wrong. I believe much mischief and confusion occurs in that way.

3834. Have you had considerable experience in analysing drugs in Germany?—In Germany and in this country.

3835. Has the result of your experience been to lead you unequivocally to the conclusion that any attempt to prohibit the importation of impure drugs would be very prejudicial to the drug trade itself?—Not to the drug trade, so much as to the manufacturers.

3836. In what regard do you think it would be prejudicial to the manufacturers?—They may manufacture their alkaloids or principles from articles which are unfit to use for other purposes.

3837. Would not the result of excluding drugs not of entire purity be very much to enhance the price and cripple the supply?—It would injure the interests of the English manufacturers, and it would enhance the price certainly.

3838. And it would limit the supply?—Yes.

3839. Lord C. Hamilton.] Is the nomenclature of drugs in the chemists' shops in Germany in German or in Latin?—In Latin; our pharmacopœia is in Latin; chemists are not allowed to have a pharmacopœia in German; they are to have a Latin pharmacopœia in order to keep them so educated that they can translate Latin.

3840. Then of course prescriptions are also written in Latin?—Yes. There is only one thing in which German physicians differ from English physicians; they write the prescription in Latin and the direction in German; they give the different ingredients in Latin, and say, "Take so much" in German.

3841. Is that course pursued somewhat with the view of keeping the knowledge of medicines in the hands of a fewer, more select, and educated class?—No, that is already the case; it is a practice that you could not follow in England, and I do not believe it is very right in Germany; it is very certain that it keeps the trade, or as we call it, a profession, select; yet still it is injuring many others who might make a good living, besides those who are already occupied; people are privileged to have a chemist's shop; only a certain number of chemists' shops are allowed to a certain number of inhabitants.

3842. Mr. Peacocke.] Is it not generally understood that the object of having prescriptions written in Latin is to obtain a universality of prescriptions; that is to say, that an English prescription will do for Germany, or Sweden, or any other country?—Most decidedly.

3843. From what part of Germany do you come?—From Saxe Meiningen.

3844. Do you know the customs and habits of Germany generally?—I have had experience in all parts of Germany.

3245. With regard to what you were examined upon just now, you said that a chemist in Germany would be punished if he sold drugs below the established price, or above the established price; if he objected to sell a drug at all at the established price, would he be equally punished?—Yes, if he objected to make up a prescription, or sell any drug in accordance with the regulations.

3246. Mr. Moffatt.] Have the chemists or the apothecaries, as you term them in Germany, to undergo any examination previously to their taking out a licence for vending drugs?—Yes.

3847. What is the nature of that examination?—Before they are taken apprentices they are examined in the minor classics, in perhaps Cornelius Nepos and Cæsar; they would have to show that they understood their own language well, and they would have to show that they had some knowledge of natural philosophy and mathematics.

3848. Before what tribunal does the examination of candidates for apprenticeship take place?—Our highest authority is a minister; in the same way, for instance, as you have a minister for war, we have a minister for medical affairs; under this minister, there is a medical board composed of physicians and chemists, and under that board are inspectors and local boards. The latter

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examine apprentices and assistants, and the former those who take shops or manage them.

3849. What follows before a licence is granted to a man to vend drugs on his own account?—He must buy an established shop, which is an exclusive privilege; I do not wish to speak in favour of those privileges; I believe they are out of date.

3850. Upon what system are those privileged shops established in any German State with which you are most acquainted?—They go such a far period back that I really do not know; they may have been granted for some services; in later times we have got licences in the large cities when the population has increased; after the population of the city has increased to 3,000, every one in the kingdom has a right to apply for a licence, and the candidates have to undergo an examination, and the most clever person, who can show the best moral certificates, would get the licence.

3851. So that those licensed shops for the vending of drugs stand somewhat in the nature of a monopoly in favour of the vendors of the drugs?—They are in favour of the public as well, who are protected both to quality and prices. One man might otherwise charge five times as much as another.

3852. Or if, on the other hand, the chemist were disposed to adopt a free trade principle and sell very cheaply, he is prohibited from doing so by the Government?—Yes, with regard to prescriptions only.

3853. Do you know how many chemists' shops there are in Berlin?—I think there are about 20.

3854. What is the population of Berlin?—About 400,000.

Mr. Stafford Allen, called in; and Examined.

3855. Chairman.] YOU are a member of a firm of Drug Grinders, Stafford and George Allen, and also of Manufacturing Chemists, George Allen and Company?—Yes.

3856. You are aware of the nature of the evidence which has been given before this Committee on the subject of the adulteration of drugs; will you state to the Committee whether generally you concur in the observations that have been made, especially on the part of members of the trade who have preceded you?—The observations have been so various that I hardly know how to answer them. My idea is, having seen part of the evidence which has been laid before this Committee, that the public have been very much abused through the papers by the evidence that has been taken before this Committee, more particularly with respect to the adulteration of drugs and powders, and the grinding of drugs; I cannot speak to any other branches of the trade than the grinding of drugs.

3857. Is it your belief that drugs are much more pure than the evidence which has been already given would lead the Committee to suppose?—Abundantly more so. We were induced to enter into the trade in 1833 from a generally expressed wish of the wholesale drug trade for the establishment of drug-grinders in whom they could have confidence, both as respects integrity and skill.

3858. Then it would appear, that in 1833 there was an impression that drug-grinding was not altogether in the hands of honest people?—There were not enough honest men in the trade.

3859. Were there not a considerable number of dishonest men in the trade?—There were one or two, or two or three.

3860. Without inquiring the exact number, there is no doubt that at that time there existed some dishonest persons in the drug-grinding trade, and it was thought desirable to introduce a leaven of a higher character?—Exactly so. From the great success that the establishment of our uncle, at Plough-court, met with, who was well known in the drug trade, it was pressed upon Mr. Charles May and myself to establish drug mills where drugs could be purely manufactured.

3861. What has been the result of that establishment?—We have received very extensive support from a number of the drug trade and wholesale druggists.

3862. Do you believe that you have got rid of dishonest drug-grinders?—I am not prepared to answer that question; but I am prepared to say that the

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Mr. S. Allen.

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manufacture of drugs, and the grinding of drugs, are carried on in a much better way than they were 30 years ago. I think that drugs were never so purely administered to the public as they are at the present time.

3863. I presume your evidence does not go to this extent, that there are no impure drugs sold?—I cannot pretend to say that there are none.

3864. Do you think that there is only a very small quantity of impure drugs sold; I speak as regards powders; those are the articles that chiefly come under my notice; that is, articles exhibited in powders. I would just observe, if you would allow me, that much has been said here of what is called the four-per-cent. system. The foundation of our business was to endeavour to put an end to that system. We never allowed it in our establishment; we protested against it from the first.

3865. The four-per-cent. system did exist very generally, did it not?—It existed to a certain extent at the time we began business, I believe. I am not able to say from personal observation, because I do not know what takes place in any other establishment than my own.

3866. Mr. Moffatt.] Are not you aware that the four-per-cent. system does exist in some instances now?—I believe it does, but to a small extent, compared to what it did 30 years ago.

3867. Viscount Goderich.] As you never practised the four-per-cent. system yourself, I presume you regard it as a dishonest practice?—We think it an unfair practice; unfair, perhaps, to both parties. The loss a drug sustains in grinding is very different in one drug from another, and it would not seem to be fair that everything should be returned with a loss of 4 lbs. per cwt.; whereas sometimes the loss is much greater, and sometimes the loss is much less. If the Committee will allow me, I will hand in a Table, showing the losses in drugs in grinding (*handing in the same*). Those are results taken from our books for two or three months.

3868. What is the substance generally mixed with the drugs to make up the loss?—I cannot answer that question, because I know nothing whatever of the operation.

3869. Chairman.] Does the loss in grinding fall upon the person to whom the drug belongs?—Yes.

3870. Mr. Otway.] You never were a drug-grinder till you ground your own drugs, were you?—My partner, Mr. May, was a drug-grinder in the country, and we transferred the business to London, and increased it; I was not a drug-grinder until that time.

3871. How did Mr. May, in his arrangements with his customers, at the time he ground drugs for other druggists, supply the deficiency or the loss on the drugs sent to him to be ground?—He did not supply the loss; he always returned the article with the real loss which it sustained in the process of powdering and drying.

3872. Viscount Goderich.] Did Mr. May find that any objection was made by his customers to his returning the drugs with the real loss?—He found that his drugs were appreciated and approved, and the practice has become more and more general.

3873. Mr. Moffatt.] And is now the general practice?—And is now the general practice; but as I said before, there may be exceptions, which I suspect, but I do not know of.

3874. Chairman.] Is there any other subject upon which you wish to give evidence?—Something has been said with respect to compound powders; that was another reason for the foundation of our establishment, and we from the first refused to make or sell them, and we have never made a pound. I wish to mention with respect to some evidence given before this Committee by a witness of the name of Gay; I was altogether astonished at such evidence. I never heard of the gentleman in the trade, and I hope his operations were but on a small scale.

3875. Is there any particular answer which that witness gave, to which you take exception?—I understand him to have said that he never ground a drug without adulteration; he particularly spoke of rhubarb.

3876. Did not Mr. Gay's evidence apply to the state of things some years ago?—Yes.

3877. Without

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3877. Without specifying the particular charge which he made, what is your experience with regard to rhubarb?—That it is universally ground genuine. At the same time I must state that for the inferior qualities (there are frequently four qualities of rhubarb made) some houses send a little English rhubarb to be ground with it. They send it to us ready mixed, but it is a very small fraction of the amount of rhubarb that is ground; it is chiefly for Ireland and the Colonies.

3878. Lord C. Hamilton.] Is there any peculiarity in the Irish climate that makes that kind of rhubarb particularly applicable?—The peculiarity is its cheapness.

3879. Do you grind the British-grown rhubarb?—If it is sent to us to be ground we must grind it.

3880. You would not mix it with other rhubarb in your establishment?—No.

3881. Mr. Gregson.] Did not you say that you ground the inferior qualities?—We grind the fourth quality; we should grind it, as we should anything else, if it was sent to us.

3882. Mr. Sheridan.] You say that a small quantity of inferior rhubarb is sometimes ground up with the other?—I said that sometimes English rhubarb was ground in certain proportions with other rhubarb for the lowest qualities; I believe the medicine itself to be nearly equally efficacious.

3883. Do you grind it yourself?—We only grind it for the trade; we do not grind it for ourselves. It is a rule of our establishment that we do not deal in any article that we grind for others.

3884. Lord C. Hamilton.] What is your belief as to the amount of British-grown rhubarb that gets into the market?—The quantity is very small.

3885. You do not believe that 20 tons have been grown near Banbury; you think that is an excessive amount?—I should have thought it was five times the amount that was used.

3886. Mr. Sheridan.] If it is equally efficacious, what objection should there be to using it?—I can see none.

3887. Is there any reason why that quantity should not have been grown in that part of the country?—There is no reason why it should not have been grown. The question I was asked, was whether in my opinion such a quantity was grown; I think not; I think there is nothing like that quantity grown, from the very small quantities that come under my own notice, and knowing what a large proportion of the rhubarb used in London is of foreign growth.

3888. How do you account for so little English rhubarb being used, if, as you say, it is equally efficacious?—There is a general impression amongst the drug trade, that it is not quite so powerful as the other rhubarb, and there is a feeling against it. The trade do not like to use it, because the public impression is, that it is not quite so powerful, although several gentlemen, such as Dr. Pereira and Dr. Timms, were of opinion that it possessed very great medicinal properties.

3889. Lord C. Hamilton.] How do you account for the very great difference in price between English and foreign rhubarb, if, as you apprehend, the two articles are nearly equally efficacious?—I hardly know how to answer that question. I do not deal in rhubarb; I merely grind it for the trade.

3890. Chairman.] Is there any other article that you wish to observe upon?—I would just observe that, from my experience, there is a constant rivalry going on amongst the drug houses as to who can get the best article; they are constantly stimulating us, by giving us the best drugs, to produce articles of better quality one than another.

3891. You have no doubt that the present state of the drug trade is much better than it was some years ago?—Very much so.

3892. Do you consider that there is any room for legislative interference with regard to the purity of drugs?—I do not see the benefit of any legislative interference, unless it is between the retail druggist and the consumer, so that the drugs may be verified in the shops. As my predecessor, Mr. Richter, stated, there might be some benefit in that, but I am not sure that the benefit would be very great. I believe that drugs are now prescribed to the public in so pure a state, that, generally speaking, there is very little improvement to make.

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3893. Mr. Otway.] It does not appear that your remarks as to the purity of drugs, at all apply to the drugs that are likely to be purchased by the poorer classes at small chemists' shops; you have not shown in any way that the drugs which come into the possession of those small chemists are not adulterated, nor is that your belief, is it?—Yes; it is my belief that they are not adulterated, or that they are adulterated to a very small extent indeed. I can only say that if there is adulteration in the drug trade, they do not let us know it, because we have always set our faces against it. At the same time, that being the case, I am bad evidence as to the amount of adulteration; I only speak of what comes under my own observation.

3894. Do you conceive, from your experience, that a small chemist, in a back street, in a low part of London, keeping such a shop as is frequented by the poorer classes, sells as good drugs as Savory and Moore, or Fisher and Toller, or any chemist of repute in London?—I think the fourth quality of rhubarb might be employed in such a case as that.

3895. Do not you think that those small chemists sometimes sell drugs that are very perniciously adulterated?—I do not think so.

3896. In the case of opium, for instance?—I have no means of knowing. My impression is that it is not the case.

3897. Lord C. Hamilton.] I understand you to say that you grind what is sent to you, but that you never mix two articles?—Yes.

3898. You have refused to do so?—Yes, many times.

3899. Does not the fact of such applications being made to you, and your character being established for not doing it, convince you that others who are less scrupulous than yourself, do carry out that practice?—The practice may exist, but I do not know it myself. I feel diffident of imputing motives to other people.

3900. You say you have refused applications to adulterate drugs; may it not be presumed that the persons who wish to have it done have gone elsewhere?—I have refused, perhaps, half-a-dozen applications in the course of 25 years to adulterate drugs.

3901. Mr. Gregson.] Do you retail drugs?—Not in London. We have a retail and manufacturing establishment in Bedfordshire, which my brother conducts. I know but little about it. He was regularly brought up to the trade, and he has the entire management of that business.

*Mercurii, 30<sup>o</sup> die Aprilis, 1856.*

## MEMBERS PRESENT.

Mr. Scholefield.  
Alderman Cubitt.  
Viscount Ebrington.  
Mr. Sheridan.  
Lord Claud Hamilton.  
Mr. Moffatt.

Viscount Goderich.  
Mr. Wise.  
Mr. Peacocke.  
Mr. Gregson.  
Mr. Kinnaird.  
Mr. Otway.

WILLIAM SCHOLEFIELD, Esq., IN THE CHAIR.

*Samuel Robert Goodman, Esq., called in; and Examined.*

S. R. Goodman,  
Esq.

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3902. Chairman.] YOU are, I believe, the Legal Adviser of the Justices in the City of London?—I am.

3903. You have held that office some years I believe?—Thirteen years.

3904. During that period, has anything arisen in your experience before the magistrates touching the adulteration of any article of food in which the justices were called upon to exercise their jurisdiction?—We have never had a single case.

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3905. Have you ever had a single case of charge against any person for the adulteration of bread?—Never.

3906. Then in point of fact, as far as practical experience goes, you know nothing of the law affecting this subject?—Nothing more than the general principles of the law.

3907. As you have no practical experience of it, the Committee will be obliged if you can state from your knowledge what the present state of the law is as affecting those who adulterate food?—I apprehend that there are four remedies for it; one is by action, another by indictment, another by summary conviction before a magistrate, and the fourth by the Excise.

3908. Taking the fourth one first, I presume we dispose of that, by saying that it applies only to articles which come under the supervision of the Excise, and not to general articles of food; therefore any action on their part would be confined to those articles?—Yes; the law upon that question would be carried out by the Excise.

3909. You are speaking now of the general law?—Yes; there is an Act of Parliament, as the Committee are aware, with respect to bread in London, and the Bills of Mortality and within ten miles of the Royal Exchange.

3910. There is also an Act affecting the provinces, is there not?—Yes; there is the General Act of the 6th and 7th of William the 4th, which affects beyond the Bills of Mortality; beyond the ten miles.

3911. What is the distinction between those Acts in their provisions?—I believe none at all; one has been taken I apprehend from the other.

3912. Can you state, in general terms, the provisions of that Act?—Yes; I have the Act with me. The general provisions are: power of search by a magistrate's warrant upon information for that purpose; search for any of the ingredients that are mentioned; that is, they may search for and seize corn meal or flour that is ground; the provisions of the Act of Parliament are for a summary proceeding before the magistrate for a penalty.

3913. You refer to the articles of bread and flour?—Yes.

3914. Is there any law within your cognizance that affects other articles of food?—With respect only to ale, beer, porter, cyder, and perry.

3915. Those I believe come under the supervision of the Excise?—They come before the magistrate as well as the Excise.

3916. What is the nature of the remedies in those cases?—Under the Ale-house Act of the 9th of George the 4th, it is an offence against the licences fraudulently to dilute or adulterate liquors. There is a penalty for the first offence of 5*l.* and a cumulative penalty upon further convictions.

3917. That is the General Act?—Yes. The Beerhouse Act is the 1st of William the 4th; that applies to mixing drugs or pernicious ingredients; for the first offence proved before the magistrates there is a penalty of not less than 40*s.* or more than 5*l.*, and for the second offence not less than 5*l.* or more than 10*l.* Then with respect to drugs themselves, there is only one Act which refers to them that I am aware of, which is the Apothecaries' Act, under which two parties, duly appointed, have the power to enter any apothecary's shop (but that does not affect chemists), to search for any medicines or drugs which are unwholesome, and if found, they shall burn or destroy them; those are the terms of the Act of Parliament. Then there is a penalty of 5*l.* for the first offence; but the larger penalties are obliged to be sued for in the superior courts at Westminster.

3918. Are there any other articles than those that you have enumerated about which there is any legislation at all?—None at all, that I am aware of.

3919. Assuming that a person purchases adulterated food of any description, is there any, and what remedy for him in the present state of the law?—The general text books state, that wherever a man does an act which will affect the public interest, that is, affect it in such a manner for the purpose of fraud or deceit, that in itself is an indictable offence; but, taking it as a general principle, if the act affects an individual alone, in many instances it would not be an indictable offence.

3920. What would be his individual remedy?—His remedy would be by action. A case occurred in January 1853, that was decided at the Central Criminal Court. A man was charged before the magistrates, and he was indicted for selling a gold chain, stating it to be solid gold, the interior of the chain being of base metal. Mr. Baron Alderson stopped that case, and said, although the man had been in the service some years, and must of necessity have had cognizance of the

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the value of the chain, yet he scarcely thought it was a fraud in the servant to do so.

3921. The indictment was not held to be good?—The indictment was drawn, but the case was stopped; I am citing that as one case. I know other cases where I have drawn indictments when I was formerly at the Central Criminal Court, where a person has been convicted of passing off chains as gold which were really not gold, that is, to injure pawnbrokers. Those are merely analogous cases to the present question.

3922. Viscount *Goderich*.] The Committee understand that the only remedy which an individual has against a person who sells him an adulterated or spurious article of any kind is by way of action?—Unless some public injury has arisen from it. There are several cases decided in our text books on this subject, viz., where a man has sold bread with unwholesome mixture in it to the military asylum at Chelsea, it was held to be an indictable offence, because it was selling to a public body; also in a case where adulterated bread was sold to the soldiers at Weedon Barracks, that was held to be an indictable offence.

3923. Then does not it come to this, that in the case of a private individual totally unconnected with a public body, his only remedy would be by way of action?—Yes; but cases might arise which would be indictable.

3924. The ordinary remedy would be by way of action?—Yes.

3925. Is that mode of proceeding within the reach of poor persons?—No, except in the county court; they might take a remedy in the county court, and they are rather fond of going there.

3926. Viscount *Ebrington*.] But practically, is it a remedy which is had recourse to either by rich or poor?—Neither, I should fancy, or very seldom.

3927. Viscount *Goderich*.] Are there such difficulties, either of expense or of any other description, as render it impossible that that mode of remedy should put an end to a wide-spread evil of that description?—The difficulties would be too great for a poor man to grapple with.

3928. Viscount *Ebrington*.] And in proportion to the evil inflicted it would be too great to make it worth a rich man's while?—Yes.

3929. Mr. *Peacocke*.] In the case you speak of, of a person being indicted for selling a chain that was not gold, I apprehend he was indicted under the ordinary case of obtaining money under false pretences?—Yes.

3930. In any ordinary case of fraud you must be aware that no conviction could be obtained under that statute; you would never obtain a conviction for obtaining money under false pretences, really and virtually, under that statute. Do you recollect any instance in which there has been a conviction obtained?—I cannot give you a case decided upon it at the present moment, but I have no hesitation in saying that there have been many at the Central Criminal Court. I am not engaged there now.

3931. Convictions for selling one thing for another?—Yes. I recollect drawing an indictment many years ago against a man for putting sand in sugar; the lower part of the bag being full of sand.

3932. Did you get a conviction?—Yes; then that was the substituting one thing for another.

3933. Did you indict him in that case for getting money under false pretences?—Yes.

3934. Mr. *Wise*.] I presume that the observations you have just made do not apply to bread and flour?—No.

3935. Under the 106th chapter of the 3 Geo. 4, you are aware that the public have already a remedy, if they use it?—I am not speaking of bread and flour; it was a general question that was put to me.

3936. With regard to the bread question in the metropolis, how do you account for the fact that the Act of the 3 Geo. 4, c. 106, which applies specially to the metropolis, has never been used?—It is a local Act; it is not in the Statutes at Large, or it is not generally known that there is such an Act.

3937. Are you aware of the origin of the Act being passed?—Not at all; it was before my time.

3938. Do you think the information having to be laid within 48 hours tends to prevent the remedy being applied?—Yes; it would be too short a time in a great number of cases. For instance, if a man purchased yesterday a loaf which he would not discover was adulterated till to-day, he might come to-morrow to the court, where there would be too much business for him even to get access to the

the magistrate without waiting five or six hours; and he might not think it worth his while to do so.

3939. Do you think if it were generally known to the public that any bakers who sold loaves made of mixed flour not marked with M, were liable to a penalty of 10 l. and to have their names published in the newspapers, that the public would avail themselves of the Act and come to you for summonses?—I think they would. I think if it were a more general Act, and if the public were perfectly aware that a general system of adulteration was going on, they would apply to the magistrates.

3940. You think that if the Act were renewed, with certain amendments and alterations, and made a public Act, it would have a good effect?—I have no doubt of it.

3941. Viscount *Goderich*.] Would not the mode of proceeding by way of indictment be more liable to objections than that you alluded to by way of action?—Very few persons would think of proceeding by indictment unless they were Government bodies; that has been my own observation at least.

3942. Your observations apply to all cases of fraud of this description, whether in articles of food or any other articles?—No doubt.

3943. *Chairman*.] Have you turned your attention in any way whatever to the possible means of making the law more summary and simple in its character?—One or two things have occurred to me. The first suggestion would be a right of search, either by actual inspectors appointed for that purpose, or by parties connected with the police, where their services could be made available. The right of search exists with respect to defective weights and measures, as you are aware; they have a right not only to search, but also to seize, which is done every week, and every day in fact. Then it occurred to me, supposing it was a drug, for example, whether that drug could not be taken to some analytical chemist, and whether his certificate might not be allowed to be a sufficient presumptive evidence of the component parts of the drug; and in order to call upon the defendant for his answer to the charge, as you do in Custom-house cases, leave the onus upon the defendant to prove the genuineness of the article. In a Custom-house case a man is taken up for smuggling; the Act of Parliament requires him to prove that the duty has been paid upon the article. Now here, if you get a *prima facie* case against the party, and raise the question upon the certificate of some competent person that he has examined the drug, you can call upon the defendant to make good his defence.

3944. Mr. *Otway*.] You are alluding to the metropolis, I presume?—I would take it as a general practice.

3945. Do you conceive that in small provincial towns you could find chemists whose certificate ought to be held valid?—I would not confine it to chemists; I would take a member of the College of Surgeons for instance, or some practical person at all events; or if there were no such person near, there might be some Government officer appointed who was capable of giving an analysis of it.

3946. Do you see any objection to the constitution of a central Board who would have that power?—That is a question to which I have not turned my attention.

3947. Viscount *Goderich*.] Can you suggest to the Committee any easy and simple remedy for a private individual against a person who sold him a counterfeit or adulterated article which would be within the reach of all?—Except by making a general Act of Parliament conformable to the general provisions of the Bread Act.

3948. And then allow the case to go before the justices?—Yes, and leave the justices to decide.

3949. *Chairman*.] In that case the prosecutor is not the individual who has purchased the adulterated flour, but the inspector, or the person acting under the magistrate's warrant?—He would be then.

3950. Under that Act as it is now?—Yes; it is not confined to the inspectors. 3951. At the present moment, if the Committee understand rightly, the person aggrieved may make an application to a police officer, stating that he has purchased at such and such a place adulterated flour, and that police officer so acting for this individual, and therefore on the part of the public also, may obtain a warrant and seize that flour, and conduct the prosecution before the magistrates?—That is according to the present Act of Parliament.

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3952. It does not necessarily fall upon the individual to right himself—Not at all.

3953. Mr. Peacocke.] You have been asked whether you thought in local towns you could find analytical chemists of sufficient skill; do not you think that that would be a question to be left to the local magistrates to determine?—No doubt.

3954. In cases which involve a larger amount of professional skill, do not you think there should be a Board in London to whom they might appeal?—Unless there were a local Board giving actual directions, I think it would be an inducement to the officers who were appointed rather to shirk their duty.

3955. What officers?—Whoever might be appointed as inspectors, if there were inspectors appointed.

3956. Mr. Otway.] Why?—I find it so in practice. We have ale-conners or tasters, who are elected by the Common Hall, and whose duty it is to go round to public-houses and taste their ale. I asked a publican the day before yesterday who had been in business 25 years, whether he recollected their coming to taste his ale; he said, "No, they come four times a year; I give them a shilling each time they come, and away they go."

3957. Mr. Peacocke.] That would refer to the fact whether or not you should have a Board in London instead of a local Board; that was not the point; the point that I was questioning you upon was this, whether or not you did not think that the magistrate of the local district before whom the case was brought, might determine whether the analytical chemist of the local district were sufficiently skilled, and in those cases where they did not deem them sufficiently skilled they might then have a Board of scientific men in London to whom they might refer the cases?—That is exactly how I intended to illustrate it.

3958. Do you consider it is absolutely necessary that you should have some, either Government interference or local Board interference?—I think it is highly expedient that it should be so.

3959. You do not think that the principle of *caveat emptor*, that the buyer should look out for himself, applies in this instance?—He would not understand in many instances the article he was purchasing.

3960. You think that a poor man, especially in those districts of London which come particularly under your notice, is utterly and entirely in the hands of the seller?—No question about it.

3961. And if it is left to him to protect himself he is incapable of doing so?—He never shows any great aptness in doing it.

3962. I suppose the expense and the loss of time would really almost put it out of his power to protect himself?—The great majority of the lower orders work by the day, and they do not like the idea of losing a day's pay upon a question of the adulteration of a quartern loaf we will say, because the penalty does not always go to the individuals.

3963. Should you say, from the communication you have had with the poorer classes of London, that there is a strong feeling on the subject of adulteration or not?—I have visited a great number of poor, even during the last winter, in order to relieve them, but I never heard any complaint upon that subject directly from them; I think I relieved as many as 600 different persons.

3964. Do you think they were ignorant of the fact that the articles of consumption were adulterated?—I have no doubt a great many of them were.

3965. Viscount Ebrington.] That indisposition to lose a day in complaining of a private grievance, which is in the main a public concern, is not confined to the poor, is it; you find it among the rich also?—In practice we observe that those who ought not to complain are sometimes the loudest in their complaints, and we are very often asked for expenses in summary convictions by persons whom one would scarcely suppose would condescend to take them.

3966. Is not there practically great reluctance on the part of individuals, whether rich or poor, to bestir themselves actively in the prevention and punishment of adulteration, though they may be perfectly aware that they, in common with the rest of the public, are suffering from it?—There really is very great indisposition, on the part of the respectable poor, to go to the police court at all.

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3967. Is that confined to the poor?—No; I have observed it in cases in which they have been summoned for poor rates, where they have been the better class of poor persons.

3968. In this case, as well as others, you think that on the principle of the division of labour some public authority might be advantageously employed to do on behalf of individuals composing the public, that which as individuals they are unwilling, and find it inexpedient, to do for themselves?—Yes; I think they would all prefer that the onus should be thrown on a public officer, rather than on themselves.

3969. You see nothing more unreasonable in a public authority protecting the purity of food, and other articles in common use, than you do in the Government guaranteeing and insuring, as far as possible, the purity of gold and silver in the shape of money?—None whatever.

Mr. Peter Mackenzie, called in; and Examined.

3970. Chairman.] YOU are resident in Glasgow?—I am.

3971. I believe you are the Editor of a newspaper in that city?—I am Editor of the "Reformers' Gazette."

3972. Your attention has been called, I believe, at some period or other, to the question of adulterations in food?—It has.

3973. Has it been called to this question with regard to any particular article of food, or to articles generally?—If the Committee will allow me, I will make a short statement as to the way in which it came under my notice. Some few years ago, when great destitution prevailed in the West of Scotland, especially in the Highlands, a large sum of money, amounting to 50,000*l.* or 60,000*l.*, was devoted to furnishing provisions, including oatmeal, to the Highlanders; at that period information was given to me that a very large quantity of that oatmeal was adulterated in the grossest manner; a letter was sent to me, which I thought it my duty to publish in the paper with which I am connected, and the contractor who furnished the meal referred to in that letter, threatened me with an action of damages. I called upon the Glasgow committee to investigate this matter, believing that the statement was true; another threat was made to me, that if I ventured to make any inquiry, an action would be brought. I found myself entangled in a matter of very great public importance: I retained three of the most eminent counsel of the Scottish Bar to defend me in this threatened action, the Lord Advocate, the Solicitor-general, and the Dean of the Faculty of Advocates. I proceeded with my investigations; a committee, of which the Lord Provost of Glasgow was the chairman, heard the evidence that I adduced; and the committee was so staggered that they found it necessary to hand over this party, the contractor, to the procurator fiscal, in Glasgow. After a great deal of trouble, and no small expense incurred by me at that particular period, the Lord Advocate of Scotland, then Mr. Rutherford, ordered an indictment to be raised against this contractor, at Glasgow, Mr. Alexander Bannatyne. He was tried in the Court of Justiciary, at Glasgow, by the Lord Justice Clerk and Lord Wood; and after a long trial the jury found him guilty, and he was adjudged to imprisonment in the Bridewell of Glasgow, for a period of three months, and to pay a fine of 300 *l.* to Her Majesty.

3974. Will you state to the Committee what was the nature of the adulteration?—Yes; the oatmeal was mixed with bran and thirds, the common food for horses.

3975. Mr. Wise.] What is thirds composed of?—The refuse and shell of the wheat.

3976. Mr. Sheridan.] If the bran had not been there would thirds have been considered an adulteration?—I dare say it would. To my amazement, in that trial the accused party brought forward some of the principal millers in Glasgow to swear that it was quite a common practice in the trade, and therefore he was to be excused; and strange to say, though the jury found him guilty, they coupled their verdict with a recommendation to mercy, on the ground that it was a common practice in the trade.

3977. Chairman.] Was this indictment laid against him under any special Scotch law?—No; there was no special Scotch law to meet the case; it was laid at common law.

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3978. Have any other cases come under your own notice at any time?—Many cases have come under my notice, but as the saying is, what is everybody's business is nobody's, in Glasgow.

3979. You are aware that a very extensive system of adulteration exists; does it exist, to your knowledge, in any other things besides meal?—Almost everything you can name.

3980. Viscount *Ebrington*.] And in other places besides Glasgow the same principle applies?—No doubt of it; there is a common expression in Glasgow, that almost everything is adulterated except eggs and potatoes.

3981. *Chairman*.] Are you of opinion that the system itself is so extensively carried on that it is necessary for the Legislature to interfere for the purpose of putting down such a widely prevailing evil?—Certainly.

3982. You do not believe that the present state of the law is adequate for the purpose?—I do not.

3983. Viscount *Ebrington*.] You do not think that the individual interest of consumers is sufficient to protect the public against the influence of adulteration?—It is not.

3984. Or that in the case of the poorer classes, their intelligence on the subject of adulteration is sufficient to protect them?—Some of them scarcely know the difference, the adulteration is so minute and cunningly made up.

3985. Lord *C. Hamilton*.] I understand you to say, this prosecution was under the common law?—Yes.

3986. Supposing instead of finding only inferior portions of the same article, the husk, and so forth, they had found any chemical agent, or anything in its nature deleterious, would there have been a similar conviction, or could you by the Scotch law have proceeded under some other Act?—I am not in a condition to answer that question specially.

3987. You say that this practice of adulteration is general; I presume you are aware that in some instances actual deleterious agents are introduced?—Yes.

3988. In practice, would a conviction take place under the same process at the common law?—I think so.

3989. *Chairman*.] Would you not recommend a more simple and summary remedy against those who adulterate?—Yes.

3990. Have you considered any plan in your own mind; have you any suggestions to offer the Committee?—It has struck me that it would be a very wise measure if the officers of Excise in Scotland, who are active and intelligent men, and much to be relied upon, had the power to go into the mills where the meal is made up, and inspect them at periodical intervals.

3991. Viscount *Ebrington*.] I think you said that there was a common saying in Glasgow, that everything except eggs and potatoes was adulterated; do not you think it is desirable that there should be some protection in other things besides flour and bread?—Certainly.

3992. Would you employ the same agency to protect the public in the case of other articles, that you would in the case of flour and bread?—I speak particularly in reference to the article of oatmeal; that is the staff of life, as we say in Scotland.

3993. In principle you see no objection to the interference by public authority to protect the public from the loss, and in some cases the injury resulting from adulteration?—Quite so.

3994. Mr. *Peacocke*.] By the Scotch common law can you prosecute other cases of adulteration than that of flour?—I do not know that we could in our inferior courts; the case noticed arose in this way; this party, Mr. Bannatyne, had made a written tender that he would furnish a particular quantity of oatmeal; now they found that that oatmeal was mixed with bran and thirds, which is food for horses.

3995. Viscount *Ebrington*.] In short it was not oatmeal?—It was not genuine oatmeal.

3996. Lord *C. Hamilton*.] As I understand, there is no law in Scotland that could have punished this man for exposing it for sale; it was merely that, having bound himself by contract, he, for adulterating some of it, came within the law?—Quite so.

3997. He might have exposed that unwholesome food with impunity in Glasgow?—He might at that time.

3998. Did

3998. Did this conviction, to the best of your belief, create any change in the general practice of the meal trade in Glasgow?—I am afraid it did not.

3999. Had it a temporary effect?—It had at the time a temporary effect, but it was dispelled, I am sorry to say, because the party was liberated before the expiry of his sentence by some means or other; how I cannot inform the Committee.

4000. He had to pay his 300 £, had he not?—Not one penny.

4001. Mr. *Moffatt*.] You have stated that in the city of Glasgow your belief is that there is adulteration in everything?—Yes; almost in everything.

4002. Will you be good enough to recite to the Committee a few of the articles in which you know, of your own knowledge, that adulteration takes place?—The last act of adulteration that I know of in Glasgow was a charge made in the Town's Hospital of Glasgow, that the drugs sent to the institution were adulterated.

4003. How was that discovered?—It was discovered by some inspectors in the house.

4004. Are there inspectors to the Town's Hospital?—Yes.

4005. They discovered the adulterations?—Yes.

4006. Therefore the drugs which had been sent there previously having been examined by them were not adulterated; so far as regards drugs, would it not be a natural consequence that this adulteration which they detected was an exception to the general rule?—I hope it was.

4007. Will you name some other articles in which you know of your own knowledge that adulteration takes place, besides the drugs sent to the hospital?—I do not know any of my own knowledge.

4008. You do not know a single article adulterated of your own knowledge?—It is the common report and belief.

4009. Do you eat oatcake?—Yes.

4010. Is that adulterated?—To some extent it is.

4011. Do not you think it is possible to get pure oatmeal to make cake in Glasgow?—It is quite possible.

4012. The adulteration is not so serious that it is worth your while to get pure oatmeal?—I like to get the genuine article.

4013. Why do not you get the genuine article, seeing that it is to be obtained in Glasgow?—I go to various parts of the country; for example, to the Highlands, and oatcake is presented to me of a very excellent quality, and in another place not far off, of a very inferior quality.

4014. Does it always follow that because oatcake is of a good quality in one part of the country, and an inferior quality in another, that it is owing to the oatmeal; may not there be some difference in the means of preparing the cake; does it follow that there must be necessarily impurities in the oatcake?—There may be something in the mode of cooking, certainly.

4015. Will you state some other articles you know to be adulterated?—Butter.

4016. What is that adulterated with?—I cannot well say what it is adulterated with; cases have been communicated to me, of parties having bought butter at the public bazaar in Glasgow, mixed with particular elements which I cannot well define.

4017. Has your own observation enabled you to detect butter adulterated?—It has not.

4018. Have you seen a specimen?—I have.

4019. Never at your own table?—At my own table.

4020. Or at that of a friend?—I have in the houses of friends seen butter really inferior, and, as I thought, adulterated.

4021. Would you not draw a very wide distinction between deteriorating an article and adulterating an article by mixing it with some foreign substance?—I would.

4022. Is it your belief that you have seen at the table of your friends, butter mixed with some foreign substance which was not butter?—It is.

4023. In what year was that; within the last two or three years?—I have seen it within the last two or three months.

4024. Is there any other article which you have seen within your own knowledge adulterated?—I cannot speak of any other article of food; bread I have seen very inferior in Glasgow.

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4025. Although

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4025. Although you state that there is adulteration in everything in Glasgow, your own personal knowledge only enables you to express a belief that there is adulteration in oatmeal?—Yes.

4026. Lord C. Hamilton.] Who has the power of remitting a fine in Scotland inflicted on parties guilty of any offence?—It is very difficult to answer that question; in reference to the case I have mentioned, the magistrates doubted whether they had power to make any investigation.

4027. Then the same parties who inflicted the punishment withdrew it upon a doubt of their own power?—Not at all.

4028. How then?—Some application had been made to the Home Office, and the sentence was departed from.

4029. Was not the reversal of that decision very injurious to the public interest?—It was; it made a very great sensation in Glasgow at the time.

4030. Mr. Wise.] You have suggested that the department of Excise should be so remodelled, and their sphere of operation enlarged, that you could entrust to them great and important duties with regard to the inspection of those articles. Has it occurred to you that it would be necessary to define what adulteration is?—I should say, if the article of oatmeal is mixed with anything else than the corn, that is adulteration.

4031. Would you not find it necessary to distinguish between adulterations prejudicial to health, and adulterations which were simply commercially fraudulent?—Yes.

4032. How would you make those distinctions?—Indeed it is very difficult to say; I am not in a condition to answer that question.

4033. How could you give instructions to the Excise?—For example, if the Excise were permitted to enter the great granaries and mills where meal and articles of food were deposited, and to examine them at periodical intervals, that would cure it probably. Oatmeal was the main matter upon which I thought I was to be called upon to speak.

4034. Do you consider that the alteration in the character of oatmeal by mixing bran with it is prejudicial to health?—I certainly do.

4035. Are you not aware that a great number of people prefer bread with bran, what is called brown bread?—In this case there was more than bran and thirds, there was some other white stuff.

4036. What was that white stuff?—I have in my pocket one of the samples that were produced at that trial; it was some kind of white stuff or other which the local witnesses could not well define.

4037. A mineral substance?—I can show it to you.

4038. Was it terra alba or plaster of Paris?—Plaster of Paris, and chalk, and there was some sawdust in it.

4039. Do not you think that if the Excise were employed it would be necessary to define their duties very minutely, and to distinguish between adulterations which were simply fraudulent and adulterations which were injurious to public health?—That is a matter for the consideration of the Committee; I can offer no opinion upon it.

4040. Lord C. Hamilton.] What was the date of this conviction, and the name of the party?—The name of the party was Alexander Bannatyne; he was tried on the 29th of September 1847, for falsehood, fraud, and wilful imposition.

4041. Chairman.] In reference to questions which have been put to you by Mr. Moffatt, I would merely ask you this; you do not profess yourself to have analysed any considerable number of articles of food, or any articles whatever. You are speaking, if I understand you rightly, from general report, and that report comes to you, in a great measure, from your capacity as the editor of an important newspaper in Glasgow?—Yes.

4042. You believe the information you have received generally to be correct?—I do.

4043. Have you read any part of the evidence which has been given before this Committee?—I have.

4044. Supposing that evidence to be well founded, do you believe there is cause for the interference of the Legislature?—I do.

4045. I do not ask you whether you know, of your own knowledge, that those adulterations have been practised, but whether you think, upon the evidence before this Committee, the Legislature ought to interfere?—I certainly do think the Legislature ought to interfere.

4046. Mr.

4046. Mr. Moffatt.] Will you mention some portions of the evidence which has been given before this Committee, which induced you to come forward and state that everything is adulterated in Glasgow?—I beg to state that the proceedings of this Committee are known to the public over the length and breadth of the land, and people naturally talk about it. They say you can scarcely get an article now-a-days that is pure; everything is mixed. There is such a competition in trades of all kinds that the rogue undersells the honest man, and the honest man, in self-defence, is obliged to practise adulteration.

4047. Be so good as to state to the Committee some fact, either within your own knowledge or from actual positive credible evidence, of adulterations which do take place in Glasgow?—I can give no direct evidence to the Committee, because I never saw with my own eyes any adulteration going on. I speak in reference to common report and belief.

4048. Mr. Otway.] I presume you are in no better position than the members of this Committee, who may purchase thousands of things that are adulterated without knowing it?—Perhaps not, but in consequence of this great fraud, practised at that particular period in Glasgow, many individuals have come to me, and said they had been imposed upon; for example, with respect to tea, that has been adulterated; sugar has been adulterated, and so on; they do not take the trouble to go to the court, because the poorer classes in Glasgow cannot afford to lose the time to dance after those matters; if there were public officers to look after those matters, that would protect the public so far and do a great deal of good.

4049. Mr. Peacocke.] You are able to state, of your own knowledge, that there is a strong feeling against adulteration in Glasgow, especially among the poorer classes?—Most certainly.

4050. Do you think that the feeling of the poorer classes of Glasgow is to require some kind of legislative interference?—Most certainly. There was a case tried in Glasgow in reference to the adulteration of tobacco and snuff; the parties were pulled up by the Excise, and it was proved in those cases that the tobacco was chiefly made of cabbages grown near to the town of Airdrie, in Scotland.

4051. Mr. Moffatt.] What happened upon the discovery that the tobacco was composed of cabbage leaves?—The party absconded, and a large fine was awarded against him in his absence.

4052. Is it not the duty of the Excise, at the present time, to look after the vendors of tobacco to see that they are selling nothing but the genuine article?—I believe it is the duty of the Excise. It struck me as most extraordinary, that whilst they have the power to look after the vendors of tobacco, brewers, and so on, they have no power to look after the vendors of food.

4053. Are you not aware that the Excise are armed with very extraordinary power to detect adulteration of tobacco, and to bring the parties so abusing the public to speedy punishment?—The Excise have the power to bring a sailor who takes in his pocket a few pounds of tobacco, to summary conviction and punishment.

4054. But the Excise have the power to detect and punish the adulteration of tobacco at the present time?—Yes.

4055. Mr. Sheridan.] And the public are thankful that such a power exists?—No doubt.

4056. Mr. Moffatt.] You still believe, notwithstanding this extensive summary power, that the adulteration of tobacco goes on to a considerable extent?—That is my belief.

4057. Have you any evidence of that beyond the one case you have stated to the Committee?—No; I may state as the ground of my belief, that that case was brought up publicly, and it was rumoured that there were many parties doing the same thing.

4058. Beyond mere hearsay and rumours, have you any fact which you can lay before the Committee?—I have no tangible fact to lay before the Committee in regard to the adulteration of tobacco.

4059. You said, I think, that there was a case of adulteration of tea brought under your special notice; in what year was that?—In 1849 and 1850.

4060. In what regard was that tea adulterated; what with?—I remember two or three people who used it, called upon me with samples; after this case of Bannatyne, they thought I was a sort of public protector; they said, "We have

Mr. P. Mackenzie. bought this tea at such and such a place, what shall we do?" I said, "I do not know what you can do; you have eyes in your head; go to some respectable shop, not into those places you have gone to."

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4061. With what articles was the tea adulterated?—I cannot tell what it was adulterated with; they believed it was adulterated with the leaves of hawthorn and sloe.

4062. Are you sure that the tea was adulterated?—I could not swear that it was adulterated, because I did not see it adulterated.

4063. Did you analyse the tea?—No.

4064. Mr. Otway.] You have no knowledge of these matters as an analytical chemist?—No.

4065. Mr. Moffatt.] You have stated that some individual brought you a sample of adulterated tea; the Committee are anxious to know by what test you arrived at the fact of that tea being adulterated?—I think in one of the instances I put it into my mouth, and felt that the taste was quite different from the tea I am accustomed to drink.

4066. Would it not be quite possible that it might be different in flavour from the tea you usually had, and yet be tea?—No, I think not.

4067. You do not think there is so extensive a range in the varieties of tea, that you would be able to detect that the particular leaf which you put into your mouth was tea or not?—I found it was not tea, because the tealeaf crumbles; this was like the leaf of a cabbage, or the leaf of a flower.

4068. I understood you to say it was like the leaf of hawthorn; the leaf of hawthorn and the leaf of a cabbage present some difference, do not they?—Yes, they do, certainly; I have myself seen frequently things swimming on the surface of the cup, that could not be genuine tea.

4069. That is, tea at your own table?—Yes.

4070. Did you take that tea back to your teadealer, and charge him with your suspicions of its being adulterated?—I did not; I have seen it again and again, a hundred times over.

4071. You never inquired of the man of whom you buy your tea why there is this extraordinary appearance of small specks floating at the top of the cup?—Sometimes I may have done so.

4072. What did he say when you told him you believed it was adulterated?—He would say, as a matter of course, that it was good when he sold it to me.

4073. Did not you try some other dealer in Glasgow, when you suspected this tea was adulterated, by reason of the small particles floating at the top of the cup?—No; I generally stick to one or two respectable persons in Glasgow. I do not believe you could go into any shop in Glasgow, and not get some genuine tea; but it is a common occurrence in almost every house in Glasgow that you will see something swimming at the top of the cup, that cannot be genuine tea.

4074. Are you sure of that?—I believe so.

4075. Have you ever intimated your grave suspicions to the person of whom you buy your tea, that the tea he was selling was an adulterated article?—No, because it is such a common matter.

4076. Mr. Wise.] As a general rule, are you of opinion that this adulteration is carried out in such a scientific manner that the public are not able to judge of this adulteration of food?—Quite so; I believe the public are not able to judge, it is done so skilfully.

4077. It is quite a science?—That is my impression.

4078. Lord C. Hamilton.] I understood you to say that your activity in this case of the oatmeal led to your being consulted very generally?—Quite so.

4079. Was not it your opinion that general satisfaction was expressed, and in fact gratitude, towards you for having called public attention to this system of fraud?—Yes.

4080. Was not there following that expression a public wish that some measure should be taken to prevent those frauds?—A very strong and general wish that some measure should be taken by the Legislature to prevent such gross and glaring frauds.

4081. You do not anticipate that the interference of the police and Excise would counterbalance the benefit to be derived?—The benefit to be derived would certainly supersede any trouble the Excise might be put to.

4082. You say, on the part of your fellow citizens at Glasgow, you believe that to be the general feeling?—I do indeed.

4083. Mr.

4083. Mr. Moffatt.] Are you deputed by your fellow citizens of Glasgow to make that statement before the Committee?—I am not. I was waited upon by Dr. Strang, the Chamberlain of the City of Glasgow, who knew the trouble I had taken in this matter.

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4084. You do not wish to convey to the Committee that the citizens of Glasgow have deputed you to invite this Committee to pass measures to protect them in regard to having the goods inspected before they are supplied to the public?—Certainly not. I attend here on request merely as a private individual.

4085. Mr. Wise.] If there were a public meeting called in the city of Glasgow, what do you think would be the opinion expressed upon the subject of adulteration?—There was a public meeting, I think, called immediately after that case of Bannatyne's, and a committee was formed and a deputation appointed to wait upon the magistrates.

4086. Were any resolutions passed?—The magistrates found they had no power to act under any existing Act.

4087. Did they pass any resolution?—The authorities of Glasgow, in consequence of that case and the gross and glaring statement made in the court of justice that it was a common practice in Glasgow to mix the meal in the way I explained to the Committee, issued a proclamation against the adulteration of meal.

4088. Have you ever heard any public desire expressed for legislation upon the subject?—I have again and again.

4089. Mr. Otway.] Have you had any communications made to you, as the editor of a newspaper, by correspondents with reference to this subject?—I have.

4090. Complaining of adulteration?—Yes.

4091. Have you published those communications in your papers?—I have. I have had complaints made to me by farmers that the very seed they have bought in Glasgow has been mixed with articles different from what they thought they were getting; that rye grass was mixed with other things, and I have published many of those communications.

Dr. Charles William Bingley, called in; and Examined.

4092. Chairman.] YOU are an Analytical Chemist, I believe?—I am Professor of Chemistry to the Medical Institution at Sheffield; my certificate as lecturer there is recognised by the Apothecaries' Hall and the Royal College of Surgeons. I am also appointed professional chemist, under the provisions of an Act of Parliament, by the corporation of Sheffield, to test the purity of the gas there. That is an Act of Parliament for the amalgamation of the gas companies there.

Dr. C. W. Bingley.

4093. In the exercise of your profession, has your attention been directed at all to the existence of adulteration in articles of food?—Yes, to several, both in agricultural produce, in drugs, and in articles of food.

4094. Will you state to the Committee, in as general terms as you well can, the result of your experience?—One case would be in the matter of agricultural produce. With respect to linseed dust, which is used as food for cattle, I once had a case where the article was adulterated to the extent of 20 per cent. with what was supposed to be warp-earthy matter, and it was sold for 10 l. per ton. There is another article, called nitrate of soda; the selling price at the time was 24 l. per ton, but it was not worth above 30 s., being adulterated to the extent of 56 per cent. with common salt. I had another case, in which a quantity of nitrate of soda was sold at 18 l. per ton, that contained 40 per cent. of common salt; another case contained 20 per cent.

4095. Is there any other important article you can refer to?—Sulphate of ammonia I have found adulterated, and guanos and bones, adulterated with ground oyster shells, and dissolved bones, matter sold for that which has been adulterated with carbonate of lime, and common mortar or sand.

4096. With respect to articles of food, drinks, and drugs, have you any evidence to give to the Committee?—In drugs I find scammony adulterated with chalk, and iodide of potassium I have found adulterated with carbonate of potash. Calomel I have found adulterated in one case with a considerable portion of alumina, a very fine kind of pipeclay. Quinine I have found adulterated with chalk and starch, and also sulphate of lime with silicious matter and carbonate

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of magnesia. I have found one case adulterated with carbonate of lime and sulphate of magnesia, and I have found it in one case adulterated with sulphate of soda.

4097. Without going through a list, is it your opinion that very great adulteration exists in drugs?—I have met with it occasionally; I do not think with respectable druggists that the cases of adulteration are so extensive as they were some years ago.

4098. You believe an improvement has taken place?—I believe an improvement has taken place within the last five or six years.

4099. Can you trace that improvement to any special cause?—I think the regulations that were made in reference to the Pharmaceutical Society have had a beneficial effect, by enabling some of the respectable druggists to ensure a greater degree of purity amongst some of their drugs; but it does exist, I do believe, to a great extent amongst the lower and inferior druggists.

4100. You believe that amongst respectable chemists and druggists pure drugs are to be very commonly found?—I believe they are.

4101. There is a class of druggists, small dealers, who systematically adulterate their articles?—They do; I have seen cases where butter has been adulterated with large quantities of water and inferior kinds of butter, and with lard.

4102. Lord C. Hamilton.] Can you give the Committee any estimate of the difference in price between butter and lard?—Butter would be worth about 1 s. 6 d. a pound in some cases; we have had butter selling at 1 s. 6 d. a pound for many months at Sheffield, and we have had it from 1 s. 4 d. to 1 s. 6 d. I believe the general average price of lard has been 10 d. The water would be present in large quantities from bad management in making it; persons in many cases, in making it up, do not get it sufficiently beaten or put together.

4103. Mr. Moffatt.] What per-centage of water do you find in butter?—In some cases 10 or 12 per cent.

4104. Would you deem that adulteration?—Perhaps not intentionally an adulteration.

4105. Lord C. Hamilton.] Is not soda, and some other things, mixed with butter, to make it absorb more water?—I believe so; I never met with instances to lead me to suppose so.

4106. Chairman.] Are there any other articles which you wish to refer to?—Pepper, I have found adulterated.

4107. Black pepper?—Black and white pepper, and chicory.

4108. What is chicory adulterated with?—I found a case in which chicory was adulterated with very fine peat dust; bog earth.

4109. Mr. Moffatt.] How did you ascertain that it was adulterated with peat dust?—The fact was that the party who applied to me about it had reason to suspect the adulteration of the chicory with peat dust.

4110. What application did he make to you in regard to the adulteration of the chicory with peat dust?—One that led me to suppose that peat dust was employed for the purpose.

4111. Did you analyse that sample?—I did not analyse that sample, but I had reason to suppose it was done.

4112. You did not analyse it, so as to be able to say that peat dust was mixed with the chicory?—No.

4113. Chairman.] Is that the only adulteration of chicory you have met with?—The only adulteration of chicory I have met with.

4114. Is there any other article?—Lime juice. I have had samples of lime juice which I have found to contain sulphuric acid and tartaric acid, and I have also found pyroligneous acid obtained by the distillation of wood, and it is in fact the acetic acid which was present.

4115. Those acids I presume are quite ineffective for the purposes for which lime juice is used on board ship?—I believe so.

4116. You would not conceive them to be a proper substitute for the lime juice?—Certainly not. I am not prepared to say what the effect upon the constitution might be. I conceive sulphuric acid would be injurious in that case, and also tartaric acid would not answer the purpose for which lime juice was intended. Lime juice is dependent for its efficacy upon the presence of citric acid, and where that is replaced by an inferior kind of acetic acid I consider it would be injurious.

4117. Had-

4117. Had you many cases of adulteration of lime juice?—I had three cases. Dr. C. W. Bingley.

4118. Mr. Moffatt.] In what period have you discovered those three cases of adulteration of lime juice?—Within the last six months. 30 April 1856.

4119. Your experience as an analytical chemist extends over how many years?—Ten.

4120. And in ten years you have discovered those three cases?—Yes.

4121. Lord C. Hamilton.] Have you tested a great quantity of the article?—Only those three samples; one contained sulphuric acid and tartaric acid, the others contained acetic acid, or pyroligneous acid, an inferior kind of it.

4122. Mr. Otway.] Am I to understand you to say that in the only cases you have tested you found adulteration?—The only cases I tested I found were adulterated.

4123. Chairman.] Under what circumstances did those cases come before you?—They were given to me by a merchant in Liverpool; a shipowner.

4124. Mr. Moffatt.] For the purpose of ascertaining whether they were pure or not?—Yes.

4125. That merchant having a suspicion that they were impure?—Yes; also informing me that he believed there was very little pure lime juice sold in Liverpool. In fact, when his own servant was sent out to fetch the article he was told that I wanted, some of the lime juice, he laughingly observed, "I think it will be an impossibility to get any pure lime juice in Liverpool that is sold for ships' use."

4126. Did you ever purchase any lime juice in Sheffield?—No.

4127. Do you believe it is equally difficult to get pure lime juice in Sheffield as it is in Liverpool?—I imagine it is.

4128. Chairman.] The consumption of lime juice in Sheffield would be small?—Yes.

4129. Mr. Moffatt.] Does Sheffield obtain its lime juice from Liverpool or from London?—I do not know.

4130. Viscount Goderich.] Is there any consumption of lime juice at Sheffield?—Not much; it has been prescribed sometimes as a specific for gout and rheumatism.

4131. Lord C. Hamilton.] The mixed qualities of this article which you describe would be inferior to the pure article?—Very much so.

4132. A ship's crew having recourse to lime juice to prevent scurvy, would suffer very much from the use of this inferior article?—It would be my opinion that it would be so; the opinion of a medical man would be such; I am not a medical man.

4133. You being a chemist, are aware that the effects of those adulterated articles are not analogous to the effect produced by the pure article?—Certainly not; I should conceive they would be prejudicial.

4134. Lime juice is not generally used, except in cases of scurvy on board ship?—It is, I believe, prescribed in some of the hospitals for cases of gout; it has been extensively used in some hospitals.

4135. But the great demand at Liverpool was for shipping purposes?—The great demand at Liverpool was for shipping purposes; lime juice, I suppose, would be obtained from the marine-store dealers, who supply the article for the purpose of ships' use.

4136. Mr. Otway.] Lime juice being very extensively used during a long sea voyage, is it not essential that it should be pure?—Yes.

4137. Viscount Goderich.] Have any cases of adulteration of flour been brought under your notice?—Yes.

4138. Will you state them to the Committee?—I have had several cases in Sheffield of adulteration of flour that have been brought to me by private individuals, in which no ulterior proceedings have been had; the question has been asked whether such and such a sample of flour was pure or impure.

4139. Chairman.] In those cases, what was the result of your examination?—I had several cases of that kind in which I found the flour adulterated, not with any deleterious substance, but with foreign meal; meal, not wheat flour; but in three cases to which the attention of the Sheffield police was called, and upon which informations were laid, after laying the informations they brought me samples of the flour to analyse, and I found them adulterated with gypsum and with a portion in one case of bone-dust.

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4140. Viscount

Dr. C. W. Bingley. 4140. Viscount *Goderich*.] Was one of those cases that of Mr. Crossby?—No; it was not Mr. Crossby's case.

30 April 1856. 4141. *Chairman*.] You know that case I presume?—Yes, I was concerned in it. At the hearing of one of those cases I have referred to, a conviction could not be had, because in the opinion of the bench the time had elapsed in which, from the statutory provisions of the Act of Parliament, the information ought to have been laid. It appears that the information should be laid within 48 hours after the seizure. The seizure in this case was made of the flour and the flour was brought to me to analyse, and owing to the time that was employed for the analysis the 48 hours had elapsed. I was not, nor were the police at the time, cognizant of this fact.

4142. Had you been aware of that, would there have been time to analyse it within 48 hours?—No.

4143. The time was not sufficient for the purpose?—Not by several days; there were three or four informations pending, and it would have been impossible to have analysed them in time to have done justice to them. The magistrates heard the case, but on consulting the Act of Parliament for the purpose of imposing the penalty, for the case was proved, and a conviction would have been had, they then discovered the informality of their proceedings, and the consequence was, that no conviction could be had.

4144. Mr. *Sheridan*.] That was one of the three informations?—Yes.

4145. Mr. *Otway*.] Was the case persevered in, or was it only on conviction that they discovered they could not impose a penalty?—The case was not persevered in; it was stated by the bench to the party, that they hoped it would be a sufficient warning, and that the publicity which would be given by the case being reported in the newspapers would put a stop to it.

4146. Mr. *Sheridan*.] Under those circumstances no conviction could be obtained, if you say that the complaint must be lodged within 48 hours?—According to the provisions of the Act it appears so.

4147. Mr. *Otway*.] Or does not it say, "or such other time as the magistrates may deem reasonable"?—I think, as a matter affecting the legal question, I had better read the clause from the book just given to me; the Act is the 6th & 7th of Will. 4, c. 37, which extends to all parts of Great Britain, except London; section 31, which refers to the limitation of information, says, "No person shall be convicted of any offence under this Act unless the complaint is made within 48 hours after the offence shall have been committed, or within such reasonable time as to the justice or justices shall seem fit, except in cases of perjury." By section 32, the application of the penalties imposed by section 17 is prescribed.

4148. *Chairman*.] Did not the justices hold that the alternative applied to those cases?—They did not in those cases; the case was dismissed.

4149. Mr. *Moffatt*.] According to what you have read, it would appear that the complaint must be made in 48 hours; it does not appear that the proof must be given at the same time?—No. I believe the flour was seized by the police, and when I had made the analysis and reported to the superintendent of police, he then caused the information to be laid.

4150. Had he caused the complaint to be laid at the time that he seized the flour it would have complied with the Act of Parliament, and the magistrates would have afforded you time to have proved the adulteration by analysis?—That I suppose would have been the case.

4151. Mr. *Wise*.] Did not the magistrates consider that due diligence had not been used; that time had been lost by the parties who ought to have prosecuted that inquiry?—No remark of the kind was made.

4152. Are you not aware of the grounds of the refusal of the magistrates?—No.

4153. Viscount *Goderich*.] Can you tell the Committee anything about the case of Mr. Crossby, of Rotherham?—I was concerned in that case; I analysed the samples of flour along with Dr. Odling, of Guy's Hospital, and with Dr. Allen, that were brought to me. There were two informations laid in that case, and one of the samples of flour was said to be pure; the samples of the other specimen of flour that I had were decidedly adulterated with a large amount of gypsum. But matters came out in evidence that led one to infer that there was a difference in the samples. I observe you have a copy of the letter which appears to have been written by Dr. Odling. I am acquainted with the circumstances connected with the letter, and it would appear from that that Dr. Odling

Dr. C. W. Bingley, 30 April 1856. Odling had a sample of the flour previous to the one that I had, from which it would appear that it was a specimen of pure flour, and not flour that was alleged to be adulterated.

4154. That relates to matters that came out in evidence?—That I believe was stated in evidence on the case of appeal.

4155. It was stated on behalf of Mr. Crossby that there was reason to suspect that those foreign substances had been added to the flour after it was seized?—That was the appellant's ground for appealing against the conviction.

4156. Have you any reason to think that that opinion was justified?—I really have no reason to suppose anything of the kind, further than from the evidence which you have before you; I was not aware at the time that Dr. Odling had had a sample previous to the samples in which he found large quantities of gypsum which could have been picked out of the sample, and were apparent to the naked eye; there was one sample in which there was four per cent. of gypsum.

4157. Dr. Odling alleges in this paper that the flour was adulterated in so clumsy a manner as to be evident to everybody?—Those analyses were made unknown to each other, and we each of us remarked the same circumstance, that there were large portions of gypsum that were apparent.

4158. Can you state to the Committee who was the person who seized that flour?—A Mr. Bland, who is high constable of the wapentake of Stafforth and Tickhill, in the southern division of Yorkshire.

4159. Is he a person whose character has hitherto been good?—I suppose so.

4160. Mr. *Otway*.] You reside at Sheffield chiefly?—Yes.

4161. The population there is chiefly of the working classes, is it not?—Yes.

4162. Have you reason to believe that in the articles supplied to that class of the community very extensive adulterations take place?—I believe there are very inferior articles sold; I do not think that the cases of adulteration are numerous; with mineral ingredients, for instance.

4163. You do not think the articles are deleteriously adulterated?—I do not.

4164. Not the general articles of consumption?—As regards flour, I do not.

4165. I mean as regards drugs and other articles?—As I have stated before, I believe the inferior class of druggists do keep very inferior articles.

4166. Mr. *Sheridan*.] Are those the druggists to whom the poor apply generally?—Yes, I should say so; a poor man would rather go to an inferior-looking shop than he would to one that had a first-rate appearance.

4167. Can drugs be purchased at a cheaper rate at a poor shop than at another chemist's?—No, I do not think they would generally.

4168. They would pay the same price?—They would pay the same price, no doubt.

4169. Mr. *Otway*.] For a worse article?—Yes.

4170. You have some experience, I believe, in the neighbourhood of Sheffield and its surrounding district?—I have.

4171. Is it your opinion that flour and other articles of general consumption there are much adulterated?—I do not think flour is much adulterated.

4172. Other articles, drugs and groceries?—I do not think that flour or drugs would be adulterated to the great extent there, as I have been informed is the case in Manchester; but the cases would be chiefly confined to the lower class of druggists. I once had an opportunity of seeing a case which was brought before the local authorities in Sheffield, relative to a quantity of inferior drugs which had been supplied to the poor-law union by druggists in the town; and there were a great number of them that were very far from being genuine; indeed they were not; opium for instance. I examined them with Mr. Heywood, who was a professional chemist in Sheffield, and we could not detect a grain of morphine, perhaps, in some of the samples of opium that were sold.

4173. Viscount *Goderich*.] Were those drugs bought at extremely low prices?—Yes.

4174. Mr. *Otway*.] They were contracted for?—Yes, and were sold at a price at which they could not be obtained from the wholesale druggists.

4175. To whose inspection were they submitted when they were taken to the union?—To the inspection of Mr. Heywood.



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4176. Who is Mr. Heywood?—He is dead now; he was an analytical chemist in Sheffield.
4177. Viscount Goderich.] Who submitted them to Mr. Heywood; the Board of Guardians?—The Board of Guardians, I suppose.
4178. Mr. Otway.] Is that the usual process, or what is done in case there is suspicion that those drugs are adulterated?—I am not aware of the process.
4179. Mr. Moffatt.] How long ago is that?—Five or six years.
4180. Mr. Sheridan.] Would not the medical attendant be the person to make the contract, not the Board of Guardians?—I am not able to say under what circumstances it arose; I was at the time a friend of Mr. Heywood's; the investigation was merely made, as far as I was concerned, *con amore*.
4181. Viscount Goderich.] You are sure that the price was extremely low?—I heard some of the prices, and I have a distinct recollection of the circumstance, that the prices were too low to lead one to suppose that it would be possible to purchase them of the brokers if they were genuine.
4182. Lord C. Hamilton.] Were tenders advertised for by public advertisements?—I have seen such tenders.
4183. Did they limit the prices to that low scale?—I cannot say.
4184. Mr. Moffatt.] Have you ever heard of any other instances of adulterated drugs being supplied to poor-law unions, save the one you have stated to the Committee?—No.
4185. Mr. Sheridan.] You do not recollect the circumstances under which it came to your notice?—No.
4186. Mr. Otway.] You only heard of it through your intimacy with Mr. Heywood?—Through my intimacy with Mr. Heywood; I assisted him in part to make the analysis.
4187. Viscount Goderich.] How long after you made the analysis with Mr. Heywood did he die?—About two years, I should think.
4188. You would not have had opportunities, such as those alluded to by Mr. Moffatt, of having those circumstances brought under your notice after Mr. Heywood's death?—No, the thing was disposed of.
4189. Mr. Sheridan.] What became of the drugs that were supplied to the union in the case you allude to?—I do not know.
4190. Do you know whether they were returned?—I believe they were; I am not at all aware what was done with them.
4191. Mr. Otway.] You do not know whether this is the fact: that the medical officer of a union may contract for a supply of drugs, and such contract having been fulfilled, the drugs may be given to the patients before their having been submitted to any inspection?—That I may almost answer with certainty; they would not be submitted to any inspection.
4192. Lord C. Hamilton.] Do you know if the medical officer obtains any advantage by getting the drugs cheap?—No, I should apprehend not; I believe he has no interest whatever.
4193. Mr. Wise.] Are you not aware that medical men are paid so much a year for attending to the poor people in the unions?—Yes; I believe they do not provide the drugs.
4194. Chairman.] I want to refer to the case of this man at Rotherham, without any reference whatever to Mr. Bland's character, which may be, I dare say, very high; do not the provisions of the law as they now stand, afford an opportunity for fraud being practised upon the honest trader by the person who selects the samples for analysis?—I should say so; it is my opinion, from the circumstances that were brought to my notice at the time of this case of Crosby's, that we had not legislative or statutory provisions to enable both parties to have samples properly taken, and inspected, when any substance was suspected to be adulterated.
4195. Under the present system, you think it a very possible case that samples may be taken from the trader's shop, and that the person so taking them may adulterate them before they are analysed?—I do; I think there are not sufficient statutory provisions to check or protect the accused party in case of information of this kind. There ought in my opinion to be some means of having samples of suspected articles properly sealed up in the presence of indifferent parties, who may have means or opportunities afforded to them to analyse them.
4196. Would this method meet the case, that the person seizing the samples should be required to place the samples in two different parcels, one of them sealed

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sealed by himself, another sealed with the seal of the trader?—That would possibly answer the case; it would in fact be some procedure of that kind which would meet the circumstances of the case.

4197. In that case, the parcel sealed by the trader would be in the possession of the person who laid the information, and the inspector's seal would be upon the parcel retained by the trader?—Exactly so. I believe in this case, and no doubt the same thing would occur in a great number of other cases, the party had his goods seized when his shop was full of customers, and he was naturally very indignant at the circumstance; other persons would be affected differently, and would be afraid; it was stated in the court at Pontefract that an offer was made to him by Mr. Bland to take a sample; he was very indignant with Mr. Bland, and told him he might do what he liked, and he took them away. I believe in many cases, if the party seizing them in the presence of reputable witnesses, could seal up the samples in such a way that they might afterwards be referred to in evidence, as being the untampered genuine article seized, it would meet the circumstances of the case.

4198. Are there any other defects in the law affecting the adulteration of flour and bread, which from your experience in these cases, has struck you as deserving remedy?—All the ingredients are mentioned in the Act of Parliament of which bread is to be composed. By the 6 & 7 of Will. 4, the Act referred to previously, a person may make bread of wheat, barley, rye, oats, buckwheat, Indian corn, peas, beans, rice or potatoes, or any of them; and with any common salt, pure water, eggs, milk, barm, leaven, potato or other yeast; there are several inferior quantities of articles, not wheat, which I have mentioned, which would be deleterious.

4199. Mr. Wise.] Are you not aware that there is a very important proviso attached to that permission, that in cases of wheaten flour being mixed with the other articles which you have named, that a baker is bound by law to put a large Roman M upon his loaf, signifying that it is mixed?—I am not aware of that, and I believe it is not generally known. How would it be, in case of selling another article for wheaten flour, because I have had a case in which a considerable quantity of barley meal was sold for flour.

4200. Chairman.] Supposing that proviso to exist, it would modify your opinion very materially as to the particular clause you refer to?—Certainly.

4201. Mr. Wise.] You have stated that the magistrates dismissed the complaint, or the charge, which was made in those three cases of adulteration of flour; can you state to the Committee what the magistrate said on that occasion; did not he assign some reason for dismissing the case?—He assigned no other reason than the fact of the information not having been laid within 48 hours of the time when the seizure was made.

4202. Did you state that no great time elapsed before the application was made to the justice, after the flour was purchased?—There was, I believe, a week elapsed.

4203. Not more than a week elapsed between the purchase of the flour and the information being laid?—About a week, to the best of my remembrance.

4204. Are you quite certain that it was not two weeks or three weeks?—At the very utmost it was not ten days.

4205. Have you inspectors of meat, and of weights and measures, under the Nuisances Removal Act, at Sheffield?—Yes.

4206. Do not you think some of the parties engaged in those inspections might also inspect bakers' shops and millers' premises?—I do not think they could.

4207. It would require some person specially qualified, you think?—I think the case we had at Sheffield lately, affecting Mr. Crosby, is a case in point. It would be impossible for such a person to inspect. Justice would not be done.

4208. If an analytical chemist were appointed for the district, the inspector might refer cases to him, and bring him forward as evidence?—Certainly. I am quite certain that no ordinary inspector of meat, such as we have in Sheffield, or, in fact, I may say briefly, that no person but a professional chemist would be able to decide whether a person was accused legally or not.

4209. Then, if this law with regard to bread were altered, to what period would you extend the power of application to a magistrate; it is now limited to 48 hours?—I would limit it to such a period as would answer the purposes of the analysis.

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4210. *Chairman.*] How long would that be, in your estimation, in ordinary cases?—A week would cover the analysis.

4211. *Mr. Wise.*] Might not a case arise of a person buying a sack of flour and its not being used for a week; on baking the bread the cook or the servant might discover that the bread was very heavy, and attention might be directed to it; how would you deal with a case of that sort?—I think it would be safer to give the length of time I have mentioned, than to run the risk of a person being falsely accused by too hasty proceedings, because the person suspected he had got bad bread. An unskilful cook would often make bread look much worse than any adulteration of flour would make it.

4212. *Chairman.*] Is there any other parts of the Act to which you wish to refer?—No.

4213. Is there any other article to which your attention has been drawn, which you think the Committee should take notice of; have you had beer or ale, or anything of that kind, under your examination at any time?—No.

4214. *Mr. Sheridan.*] Do you know by whom the medical attendants generally in the union in which you reside, are supplied with drugs?—I do not; with the exception of the case I have alluded to, I have not had any instance brought practically before me.

*Mr. John Postgate, called in; and further Examined.*

Mr. J. Postgate.

4215. *Chairman.*] AT your last examination before the Committee we were under the necessity somewhat of hurrying to the conclusion of your evidence, and the Committee are anxious to give you an opportunity of completing your evidence; on many points upon which you gave evidence on the former occasion the Committee have had very abundant information in confirmation of what you stated; and they desire you, as far as you possibly can, to confine your evidence to those adulterations which have come immediately under your own observation, and not to go into too many particulars even with regard to those?—In my former examination I should have proceeded to state the objects for which agents are used to adulterate; the first is to increase the bulk and to give weight, and to make more of the substance by the addition of substances of inferior value; as an example, I will give the addition of flour to mustard, of excess of pearl ashes to cyanide of potassium, and of ground rice to pepper; the second object is, to restore colour after deterioration; as examples of this, I would give the addition of turmeric to mustard after it has been reduced in colour by the addition of flour, and the addition of annatto to watered milk. The third intention of adulteration is to impart pungency, so as to make the adulterated article to resemble the genuine one; as an example of this, I would mention cayenne to adulterate mustard and pepper, and alum in acidulated drops, instead of cream of tartar. The fourth intention or object of adulteration is, to give a superior appearance to inferior articles; for instance, alum to unsound wheat and flour, and plaster of Paris to flour. The fifth object is, to give a fictitious colour to different commodities, for instance; copperas to make pickles green, and burnt sugar to acetic acid, to make it resemble malt vinegar. I may mention the prevalence of adulteration in towns; I found at Lincoln, plaster of Paris in flour, or terra alba and sulphate of lime.

4216. *Mr. Moffatt.*] Where did you find that adulteration?—In samples that were produced at a meeting I was attending.

4217. *Mr. Gregson.*] Was that article adulterated in the baker's hands or the flour dealer's hands?—Those were samples given to me by a public officer, which were seized at a baker's. A quantity of pig meal was given to me which was adulterated with sulphuric acid; and two or three pigs had been poisoned by the substance. At the Lincoln meeting three or four samples of coffee were produced, which were all found to be adulterated, and those samples were purchased as pure coffee, and at the price of pure coffee. Vinegar was found to be adulterated with sulphuric acid; mustard was adulterated; lozenges contained an earthy substance; and carbonate of soda, it was found, did not effervesce upon the addition of sulphuric acid. I may state to the Committee that the meeting was perfectly unanimous (the mayor was in the chair) as to the necessity of legislative means being adopted to stop the practice of adulteration. At Dudley, at a recent meeting, samples of coffee which were obtained were adulterated; in fact, the druggist

druggist who purchased those sample is himself in business in Dudley, and he stated, that when pure coffee was required in Dudley the trade stated that that was the coffee that they had to sell, and that they had none else. I think three or four samples were examined.

4218. Was it labelled "mixed coffee"?—Some was labelled and some was not labelled; the majority of the samples were unlabelled. The vinegar I found to contain an excess of sulphuric acid.

4219. *Mr. Moffatt.*] What per-centage of sulphuric acid?—I could not say; it was not tested. Mr. Hollier was in the chair, and he made a statement to me, which he begged me to mention in reference to some drugs which were supplied to an institution at Dudley. He pointed out that a tender sent in to supply the drugs was positively under the price current at the time. The tender was accepted, and that gentleman produced samples of adulterated drugs at the meeting.

4220. *Mr. Sheridan.*] To what institution were those drugs supplied?—I believe it was a dispensary; I am not certain. Mr. Hollier was, I believe, one of the committee of the institution, and he told me that the tender was sent in to supply the committee with drugs under the price current.

4221. *Mr. Moffatt.*] Is Mr. Hollier a druggist?—Mr. Hollier is a druggist. At Scarborough I found the bread much adulterated, and producing a painful state of the stomach, named gastrodynia. One loaf a medical man informed me contained  $4\frac{1}{2}$  per cent. of alum, and he had two cases of dyspepsia in consequence of the consumption of that bread.

4222. Was that discovery the result of an actual analysis?—Yes; I tested several articles there. At the Leeds meeting I found the samples of coffee adulterated, and the vinegar and mustard.

4223. *Chairman.*] Has the general result of the examinations which you have conducted in various large towns in the kingdom been to convince you that adulteration prevails very extensively?—To make a rough estimate, I should say that perhaps two-thirds of the articles have been found to be adulterated in the towns that I visited. I may enumerate the towns of Leeds, Bradford, Wakefield, Birmingham, and Wolverhampton.

4224. *Mr. Sheridan.*] Under what circumstances did you visit those towns for the purpose of ascertaining those facts?—I was communicated with by gentlemen; sometimes by professional gentlemen, and sometimes by mayors, asking me if I would assist them in holding meetings to test the commodities, which I did generally.

4225. *Chairman.*] You are well known to be a person who has devoted a good deal of attention to the question of the adulteration of food?—Yes.

4226. In point of fact this Committee may be said to have originated in communications made by yourself to me, with a view to a legislative inquiry?—Certainly.

4227. That is the ground upon which you have been consulted?—Precisely.

4228. *Mr. Gregson.*] Am I to understand you to say that two-thirds of all the articles that you have mentioned were adulterated?—Yes; those were samples obtained by other persons, not sent by myself. I told the persons to purchase them from any shop, and not to omit the respectable shops. I have here a statement with regard to the price of milk of sulphur which I should like to bring before the Committee. Common milk of sulphur, which is the milk of sulphur ordinarily sold, is 28s. a cwt.; the pure milk of sulphur is 75s. a cwt. I found recently 13 grains of alum in half a pound of bread, and a gentleman who consumed it was unable to follow his business the next day. I strongly advised him to prosecute the party, but he felt reluctant to do so. I have reason to believe that the use of alum in bread is very injurious indeed. I had, not long ago, an attack of fever, and being out of bread I sent to a baker's for a loaf of bread, at the time that I was under the influence of medicine. I know that this bread contained alum, and it positively checked the action of the purgative medicine.

4229. Where was this?—In Birmingham, within the last two months.

4230. *Mr. Moffatt.*] Are you sure that it was the bread that checked the operation of the medicine, and not some other article of food which you had taken?—I am as certain that it was the bread as I can be.

4231. Might not it have been some other food?—No, for at that time I took nothing but tea. Perhaps the Committee will allow me to mention something with regard to the butter which is imported into this country from Ostend; I found that

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that the butter was largely adulterated with flour and water; even a retailer in Birmingham, who paid a very good price for it, had been himself deceived; he produced the samples at the late Birmingham meeting.

4232. What per-centage of water was there in that butter?—I found that one pound contained an ounce of water, and half an ounce of flour.

4233. Do you consider the presence of water in butter an adulteration?—Certainly not; it is naturally present in the butter, and sometimes a quantity of salt is added to the butter, which makes it retain more water: had the butter become deficient in weight it might have been seized in the market-place.

4234. You do not consider the presence of water in butter an adulteration?—Certainly not.

4235. Do you consider the presence of salt in butter, which is imported from Holland, an adulteration?—Certainly not.

4236. The butter was sold in the state in which it was imported?—Yes.

4237. Therefore the adulteration did not take place in this country, whatever it was?—No; the seller of the butter went to the expense of having the butter analysed.

4238. *Chairman.*] I believe you have turned your attention to the consideration of remedies which you think would be effectual to prevent adulteration?—Yes; I suppose the fact of adulteration to be established, and I recommend that an Order in Council prohibiting injurious, pernicious, and fraudulent adulteration should be issued at once; that a special Act of Parliament should pass, to come into operation six months afterwards; that all injurious, pernicious, and poisonous adulteration should be declared illegal, and the sellers held responsible; that some central body, for instance, the Board of Health, should issue from time to time instructions as to what constitutes injurious, pernicious, and poisonous adulteration; that an officer should be appointed to examine and test commodities, articles of food, and drugs; and perhaps this officer should not be named an inspector, as there seems to be a great objection to that word, but an analyst, analyser, chemist, or custodian of the public health. With regard to his qualifications, I should state that he should be practically acquainted with genuine articles; that he should, secondly, be capable of scientifically examining, testing, and analysing them; that he should, thirdly, be acquainted with the effects resulting from the use of adulterated articles. Perhaps a medical man who has been educated in chemistry, and passed a special examination to prove his ability to detect adulteration, would be the most suitable person; that the appointment of the officer should be by the local authorities under the instructions, and subject to the approval of some central body, that he should not be removable by the local authorities, and that complaints shall be forwarded by the town clerk; and that he would be held responsible to the public from the publicity given to the proceedings. Then, with regard to his duties, they would consist, first, in purchasing or causing to be purchased samples of commodities for analysis; secondly, that he should examine articles sent by the public and traders suspected to be adulterated. In those cases I would suggest that fees should be paid, to go into the borough fund. Traders could then have no excuse for selling, unknowingly, adulterated articles. From the articles to be examined a sample should be taken and placed in the care of the town clerk, to be locked up and produced in case of a dispute respecting the analysis. The third duty of the officer would be to give evidence; and fourthly, to inspect mills, bakeries, confectioners', druggists', and other shops for pernicious adulterations, after previous conviction. Fifthly, fraudulent adulterations could be suppressed by public proceedings by a public prosecutor, or by the officer appointed to check adulteration. The analyser could examine linen, cloth, and silks, and if found to be adulterated, a prosecution could be instituted through the public prosecutor. Sixthly, a salary should be fixed, adequate, and not dependent on the prosecutions. I would recommend that the magistrates should have summary jurisdiction to fine and imprison, according to the nature of the offence. In cases of doubt and difficulty respecting the analysis, the magistrates should call in another analyser to analyse the sample locked up. Power should be given to the magistrates to order inspection after repeated conviction. There should be a power of registering traders, and registration should be refused to those traders who have been convicted so many times of having sold adulterated articles, or for having short weights and measures. Lists of registered tradesmen should be published half-yearly, and publicly posted; and the names of persons convicted of having sold adulterated articles, and for having

having short weights and measures, should be published, and also publicly posted, half-yearly. Certificates of registration should be issued annually. A distinction would be thus drawn between the honest and dishonest tradesman, of value to the former, and of great importance to the public. It would be desirable to compel every trader to register before commencing business. Persons directly concerned in, or accessory to pernicious, injurious, and poisonous adulteration, and the adulteration of drugs, should be declared criminals. And I would recommend that articles should be sold under their proper names. I think that the chicory Minute perhaps ought to be either repealed, or the quantity of chicory to be mixed with the coffee should be fixed.

4239. Mr. *Gregson.*] The per centage?—Yes.

4240. Mr. *Moffatt.*] If the quantity of chicory were so fixed, could you detect whether that precise quantity was in the coffee which was allowed by law or not?—Pretty nearly; not to a decimal.

4241. Could you detect it to 10 per cent.?—I am not prepared to say; I should think so.

4242. Mr. *Gregson.*] Are your recommendations confined to pernicious adulterations, or do they extend to deceptive admixtures, that is, selling one article for another?—Yes.

4243. Lord C. *Hamilton.*] What benefits are to arise from persons being retained on the register, and what penalties are to follow their being struck off?—The public would be able to distinguish then between an honest trader and one who had been convicted of having sold adulterated articles, and of having had short weights and measures, by his non-appearance on the list of registered tradesmen. I would not compel every tradesman to be registered, but I would afford the public an opportunity of knowing those tradesmen who were conducting their business fairly, and of drawing a distinction between them.

4244. Mr. *Gregson.*] Do you propose to have two classes of registration?—Two lists; a list of those who have been convicted of having short weights and measures, and a list of those who have been fined or imprisoned for having sold adulterated articles.

4245. Mr. *Otway.*] I thought you proposed to register every tradesman?—It would be desirable to compel every trader to register.

4246. Why?—I think you would be able to carry out this plan very much better, and it would be a greater penalty to him when he was struck off the list.

4247. Mr. *Gregson.*] Do you propose to register every tradesman in every branch of business throughout the country?—The shopkeepers.

4248. Mr. *Wise.*] You have stated that you propose to appoint inspectors; would you not have, in giving instructions to those inspectors, to define, first, what adulterations are; secondly, what adulterations are prejudicial to health; and thirdly, what the adulterations are which are simply commercial frauds. How do you intend to define adulteration?—Injurious and pernicious adulteration I would define to be the admixture of substances injurious in themselves to the public health with articles of food. Fraudulent adulteration I would define to be the deterioration of a commodity, and the lowering of its value by the admixture of inferior substances; for example, potato starch with arrowroot.

4249. If you appointed inspectors on the ground of public health, how could you give them instructions to interfere with a question simply of public morals?—I think that some central authority should issue instructions with regard to what constitutes injurious adulteration; of necessity if you interfered in one case you would in the other.

4250. You would have the Secretary of State, the Board of Trade, or the Board of Health, issue a schedule of what you call hurtful adulterations?—I would.

4251. Like the French Conseil de Salubrité?—Yes.

4252. Mr. *Otway.*] Which schedule should be a permanent guide?—Yes. If a particular kind of injurious adulteration were defined by an Act of Parliament, shortly after that adulteration had been suppressed, another would supply its place. I think that the individual appointed should be specially educated for the work of testing and analysing those commodities.

4253. Who is the gentleman to whom you are referring?—I mean the inspector or analyser.

4254. Are you proposing to appoint one officer for the whole of the United Kingdom?—One or two perhaps should reside in every large town.

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4255. *Chairman.*]

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4255. *Chairman.*] Have you any other suggestion with regard to the remedies to make to the Committee?—I believe that if an officer was appointed, fraudulent adulteration might be suppressed to a very great extent by the appointment of a public prosecutor; I believe there are many persons who would send things for analysis, and that a proceeding could be instituted through a public prosecutor. In this way the small retailer could protect himself.

4256. *Mr. Otway.*] Do you propose that the dictum of that officer should be sufficient, and that if he declared that an article was adulterated, that should be considered as sufficient evidence affecting the tradesman?—I think that his evidence should be taken by the magistrates, and if they were dissatisfied, they should have the power to call in the aid of another analyser, and to hear the evidence of the parties.

4257. *Mr. Wise.*] If the public prosecutor to whom you have alluded brought a charge against an individual, and that charge could not be proved satisfactorily, how would the unfortunate individual get his expenses; from what fund would you pay the tradesman who might be so seriously injured?—I scarcely know what reply to make to that question.

4258. Would you not find it a simple course to limit your prosecutions to adulterations which were injurious to health?—I think so, decidedly. By the appointment of such an officer, you would have in a town a person capable of testing and analysing, for the purpose of detecting fraudulent adulteration, and then proceedings might be taken by a private individual, if he was so disposed, for the suppression of that adulteration.

4259. Would not the fraudulent adulteration of food, although not injurious to the public health, be pretty much in the same position as the admixture of devil's dust in cloth, and other admixtures in articles for wear?—I think it is exceedingly desirable to check fraudulent admixtures by the officer appointed, but I doubt whether that could be fully carried out, or whether it would be submitted to, in the case of certain mixtures, by the traders of the country.

4260. Do you think that with the great demand for cheapness it would be possible to carry out such a system of interference as you propose?—I think that a commodity which is adulterated fraudulently is lowered in value to the purchaser, and it is desirable on his account that the adulteration should be prevented; I do not think that I should interfere with the seller, except for his benefit; he would obtain the same profit on a genuine commodity as on an adulterated commodity.

4261. *Viscount Goderich.*] Is there, in your opinion, any real or advantageous cheapness in buying an adulterated article?—I think not; I think that there is a great mistake in the public mind with regard to that. A poor man makes a purchase of coffee, which is mixed with chicory, and if it makes a black solution he thinks that it is genuine coffee; and that is the case with regard to tea. If the tea which he buys forms a high coloured solution, and is rough on the palate, perhaps the poor man might suppose that it was very excellent when it contained a strong astringent. I know from the numerous samples of ground coffee I have purchased at the poor man's shop, that he is defrauded to an enormous extent, and I think, for the public good, and especially the poor, fraudulent adulteration should be suppressed by the officer appointed.

4262. *Mr. Otway.*] Is it a fact within your knowledge that the poor people of this country buy tea in the dearest manner, and buy the worst tea?—I think the poor man pays a very great price for his small quantities.

4263. And gets the worst article?—Yes. I know that bread is most extensively adulterated, and the poor are the chief sufferers. I have myself made, for an experiment, 13 lbs. of bread out of 7 lbs. of flour, and I believe that 30 lbs. of bread may be made from 14 lbs. of flour, by the addition of rice, fixing a large quantity of water.

4264. *Viscount Ebrington.*] Is it not the natural consequence of buying things in very small quantities that a higher price must be paid for them than if they were bought in larger quantities?—Yes, on account of the trouble being the same.

4265. *Mr. Moffatt.*] Am I to understand you to say that you propose to recommend to this Committee that analytical Boards should be established throughout the kingdom to detect whether articles have been adulterated or not?—No; I only advise that officers should be appointed under the local authorities, not under the control of the local authorities, and that a central authority should be appointed for their guidance.

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4266. 'That being an analytical Board in London?—Some body might be thought to be desirable; I do not state myself what that body should be.

4267. Do you propose to have one officer of that description appointed by some authority out of the district to analyse all articles which are assumed to be adulterated?—Yes.

4268. All articles, both articles of food and drugs?—Yes.

4269. And you propose that a fee should be charged upon all articles brought to him by the public before the analysis is made?—In certain cases; but he should be specially empowered to make purchases himself in order to suppress the evil. I think that if people had fees to pay, adulteration would go on as it does at present.

4270. To whom is this officer whom you propose to create to report his proceedings?—To the magistrates, I suppose, in the same way as the inspectors of meat and markets.

4271. *Mr. Otway.*] And the inspectors of weights and measures?—Yes.

4272. *Mr. Moffatt.*] Would you propose to appoint him in the same manner as the inspectors of weights and measures are appointed?—I am not aware of the manner in which those officers are appointed.

4273. How do you propose to appoint those officers who are to analyse the various commodities which are sold by the traders of this great country?—I think that the qualifications necessary for the office should be distinctly stated, and after that the officer should be appointed by the local authorities, under the instructions of, and subject to the approval of the central Board.

4274. You propose, in the first place, to create a central Board?—I would not propose that myself. I think that the Board of Health might be able to undertake the duty.

4275. You would give the Board of Health the power of appointing this officer, but who would you propose should examine the officer as to his competency for analysing all the various articles which are brought to him?—Some competent Board, I think, ought most certainly to examine the officer as to his qualifications.

4276. Do you think that it would be an easy matter to get any one person qualified to decide as to the adulteration of the various articles that are sold throughout the country?—I think not. I think that there should be some preliminary education, which should fit a man of ordinary intelligence for the office.

4277. You have given great attention to this subject?—Yes.

4278. Would you feel yourself qualified to decide with regard to any article generally sold, whether that article was pure or whether it was adulterated?—To speak generally, you may ascertain readily whether certain things are adulterated; but there are commodities which it might be difficult to deal with, and which would require a lengthened analysis, and perhaps it would be necessary to have the opinion of another as to the question of adulteration.

4279. You have named the article of tea, in which you state it would be difficult to distinguish whether there was a strong astringent; have you analysed any tea in which there was a strong astringent?—I have tasted tea; I would not state that I have analysed it minutely.

4280. Have you discovered any property in the teas which have been brought to you for analysis in which you found any strong astringent which did not proceed from the tea itself?—I have found catechu in tea. The subject of tea has not engaged my special attention.

4281. As regards coffee, assuming that there were five per cent. of chicory mixed with coffee, would you be able to discover that?—I think so.

4282. Have you ever detected five per cent. of chicory in coffee?—No.

4283. What articles have you analysed?—Bread and flour.

4284. I presume that in bread you would not allow the use of alum?—No.

4285. Do you think that it would be within your power as an analytical chemist to detect one-half per cent. of alum in bread, or a much smaller quantity?—In the case of bread you would take a large quantity for analysis.

4286. Could you detect a half per cent. of alum in bread?—I think so.

4287. If there was a mixture to the extent of half or one per cent. of any foreign substance in wheaten flour, of which the bread was professed to be made, could you detect it?—I would not state that positively. My examination has been more testing. Though I have analysed bread, flour, and other commodities,

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I would not say that I am an analytical chemist by profession. I have tested and analysed articles of food and drugs, to ascertain for myself the extent of the evil to be eradicated.

4288. As you have come before the Committee with a plan proposing a remedy for grievances which are alleged to exist, I am anxious that you should state, having of course considered this question, whether you believe that the officer whom you propose to appoint could in all cases, or in the great majority of cases, positively decide that there was adulteration, and if so, to what extent the adulteration went?—A suitable person could.

4289. From what source do you derive that impression, because you do not appear to be yourself an analytical chemist, or able to decide positively as to the adulteration of any of those articles?—I decide the question from the conviction in my own mind of the correctness of the analyses I have made, and the tests I have applied. I think, with ordinary precaution, chemistry is a certain science, and its results are certain. I think that a careful analysis should be made, and that in case of the slightest doubt another analysis should be made of articles suspected to be adulterated before a decision is arrived at by the magistrates.

4290. You propose that the officer shall report his analysis to the magistrates of the municipality?—Yes.

4291. And you also propose that the magistrates of the municipality are to keep lists, which they are to publish, of parties who have sold goods which are asserted by the officer to be adulterated?—After the conviction of the parties.

4292. Is the officer, before publishing the list, to prosecute the vendor of the adulterated article?—A summons should be issued by the magistrate for the appearance of the party before the magistrate.

4293. Who is to apply for the summons; the analytical chemist?—The officer appointed.

4294. And to state the result of his analysis?—To summon the party in case of an adulteration being detected. That proceeding I believe is adopted under the present law with respect to bread. A quantity of bread is purchased, an analysis is made, and then a proceeding is instituted by information being given to the magistrates, and a summons issued; and the evidence of the analytical chemist is heard, and other evidence.

4295. Is it within your knowledge that the law which exists at the present time is extensively acted upon with respect to bread?—Very rarely, on account of its expensiveness and the loss of time which is occasioned in following up the cases.

4296. Does not the law with respect to bread exist in as full force as the law which you propose to apply to any other articles?—As regards bread.

4297. As regards bread is there not as plenary power as you would propose to apply to any other article?—I am scarcely conversant enough with the law affecting bread to be able to answer your question. I think that the Act of Parliament with reference to bread is stringent, provided it were carried out; but you have not officers appointed to look after the adulteration of bread; and therefore adulteration prevails, inasmuch as what is everybody's business is nobody's business. The public generally do not like to prosecute.

4298. You propose that no publication shall occur in regard to discoveries of adulteration by the officer whom you propose to create until the case has been tried before the magistrates?—Certainly not; it would be a very dangerous power to place in the hands of any individual.

4299. Do you think that when a case was placed before the magistrates you would have a fair guarantee for the accuracy of their decisions?—I think so.

4300. Would not this occur, that your officer whom you appointed to analyse, might allege that the article was adulterated, and declare it to be mixed with so and so, and the evidence of others perhaps equally competent with himself would be produced to say that the article was not so adulterated?—I would have a sample taken from the article which he examined, which sample should be left in the care of the town clerk, and which could be produced so that any number of analytical chemists could be employed; and thus any error would be refuted.

4301. That measure would involve very considerable expense, would it not; is not analysing samples a very expensive thing?—There are certain things which are very readily tested, and very cheaply tested by the microscope. With regard to bread, it would be attended with some trouble and expenditure.

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4302. Would not an analysis be attended with great trouble with regard to a great many drugs?—With regard to some medical preparations there would be very little trouble; you could readily ascertain the presence of adulteration; with regard to some drugs it would be a work of time.

4303. How many officers of this description do you consider would be requisite to protect the whole community of the United Kingdom from adulteration?—I think the sellers ought to be held responsible, and the fact of such an officer existing would prevent adulteration to a great extent. The retailer would find it his interest to go to the analyser and say, "I have received this article from the wholesale dealer in London; perhaps it is adulterated; will you make an analysis of it." If he paid a fee for that analysis, and it went into the borough fund, the salary of the officer would be met, and the retailer would be benefited.

4304. How many officers do you calculate would be required to protect the trade of the United Kingdom?—I should suppose for Birmingham, for instance, one analyser would be sufficient, after due notice was given prohibiting adulteration.

4305. Would you have one analyser for each of the smaller towns in the kingdom?—For a district.

4306. Have you made any calculation as to the number of men that you would require for the purpose?—No.

4307. Or of the cost which would be required to pay them?—No; I think that the salary should place the officer in a perfectly independent position, and he should not be dependent in any way upon the convictions.

4308. You have arrived at no conclusion as to what your plan would cost the country?—I think that the public would be benefited very much indeed by the appointment of officers of that description. I suppose that the salary would be 500 *l.* a year.

4309. Do you propose that the salary of the officer should be paid out of the Consolidated Fund, or out of the local rates of each district?—Out of the local rates of each district.

4310. Mr. Gregson.] Would not the fines collected from tradesmen be applicable for that purpose?—I should think so.

4311. Mr. Moffatt.] Assuming that the retailer vended adulterated goods, and it was proved that he sold those goods in the state in which he purchased them, what course would you pursue?—I think he would not have an excuse for vending those commodities, seeing that he would have the opportunity of taking a sample to a public officer, paying a small fee, and getting it analysed.

4312. Would not that involve his taking a sample of every species of goods?—If it involved that it would show that he was not a very competent person to commence business. I suppose a person keeping a shop ought to be acquainted with genuine commodities, so as to be able to protect himself as well as his customers.

4313. Therefore, you leave him in the main to protect his own interests against adulteration; do not you think that the consumer is as competent to protect himself as the other party?—Certainly not.

4314. Viscount Ebrington.] You expect the vendor to understand the particular things in which he deals, but you do not necessarily expect the customer to understand everything which either his necessity or his fancy may in the course of his life induce him to buy?—Certainly not. If you sent for me as a surgeon to prescribe for you for any complaint, you would not be the judge yourself; I should be the judge, and should be held responsible to you if I did wrong. I think that the seller is responsible to the purchaser, and is bound to supply him with the commodities inquired for.

4315. Mr. Moffatt.] Is it your opinion that there is a fair analogy between employing you as a medical man to treat some internal or external malady of the body, and a person being a judge whether sugar is adulterated or not?—I think that the responsibility differs in degree; a gentleman would be perfectly ignorant of his complaint, but I, as a surgeon, ought to know, and if I do not know, and he is damaged in any way, I am the responsible party. I think, with regard to commodities, the purchaser is not in the same position as the seller; the seller is bound to supply what he is asked for. The responsibility in the two cases

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Mr. J. Postgate. differs in degree. The responsibility of a professional man is different from that of a mere vendor of any commodities; but I think that the seller, as the responsible party, should understand the articles in which he deals, or he should not be allowed to keep a shop.

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4316. Do not you believe that your own housekeeper is able to judge whether sugar is adulterated or not?—She could tell if it contained sand, but she would not be able to tell if it contained inferior sugar; nor would she know whether tea, coffee, or bread were adulterated. In fact, with regard to bread, if three years ago a loaf of white bread had been presented to me I should have said that it was very good bread indeed, but since I have attended to this matter I have found that white bread contains alum and so on; I know that it ought not to be white; I know that it ought to be of a yellowish colour.

4317. You apprehend the public being still afflicted with very inferior bread is owing to the absence of an officer to inspect that bread?—It is owing to the absence of information. A demand has been made upon the baker for very white bread, and to meet that demand he has been, in a great measure, obliged to add substances to produce that whiteness, although I believe that adulteration is really carried on as a matter conducive, as the party thinks, to his own interest.

4318. I think I gathered from your previous evidence, that you considered any mixture to be a fraudulent adulteration; do you classify all mixtures in the category of fraudulent adulterations?—I would not go to that extent.

4319. Will you define what you hold to be fraudulent adulteration?—I should say, that the addition of potato starch to arrowroot was a fraudulent adulteration, inasmuch as it is a substance lowering the quality of the article to the purchaser; or the use of tobacco in beer, instead of the proper quantity of malt; I should consider that tobacco in beer was an injurious adulteration.

4320. Would you consider the mixture of an article of a high price with a lower priced article a fraudulent adulteration, although the public got the benefit of obtaining what was alleged to be a very good article at a very much lower price?—Unfortunately, they get it at a much higher price.

4321. Assuming that they do get it at a lower price, would you say that it was a fraudulent adulteration?—I should say that it was a deception practised upon the purchaser, if the purchaser was kept in ignorance of the admixture.

4322. Would not this case come within the scope of your officer's judgment; if a thing was sold as the best sugar or the best coffee, and it was not the best, but an inferior coffee or sugar, that would clearly be a fraud; and if there was very good tea mixed with inferior tea, and it was sold as best tea, that would be a fraud, in your opinion?—I think so.

4323. It would come within the scope of the officer's power of informing against the vendor who sold mixed tea as very good tea?—Yes. With regard to the article of cream of tartar, that is sold at a price at which it is impossible to procure the genuine article. Many tradesmen have said to me, "If a public officer was appointed to look after these things, or there was a cheap mode of proceeding, I would purchase of this man who is underselling me, and proceed against him, to protect myself from the unfair competition to which I am subjected."

4324. There is genuine cream of tartar to be obtained, is there not?—I believe so.

4325. Is not the cream of tartar which is supplied to the public sold at a less price; and therefore the public gets the advantage of buying the inferior article at a lesser price?—The cream of tartar that came into Birmingham was adulterated with three parts in four of alum, and was sold at the price of the best commodity.

4326. Was that druggist, assuming always a competent knowledge of that which he was dealing in, so ignorant as not to discover that there was only 25 per cent. of the real article, and 75 per cent. of adulteration?—He did discover it afterwards.

4327. What did he do?—I strongly advised him to send the sample back again.

4328. You do not mean to say that such a practice generally prevails?—I believe that cream of tartar is adulterated with alum; and returning to the article of milk of sulphur, you find that common milk of sulphur is sold at the same price as the genuine milk of sulphur, though the genuine commodity will

will cost 75s. a hundredweight, and common milk of sulphur 28s. a hundredweight.

4329. I am anxious to see how your proposed plan would operate upon other things than drugs: can you give evidence with regard to articles of consumption, say, for example, the articles vended by grocers, or tobacconists, or brewers; how would you propose in those cases to deal; take, for example, the article of beer: what would you define to be perfectly pure beer?—I should say that beer ought to be made of a solution of malt and hops, fermented.

4330. And no other article?—No.

4331. Would you permit any sugar to be used?—Yes; because that would assist in the generation of spirit; and that proves the necessity of some central body to issue instructions.

4332. Then you do propose to have a central power?—I think it is necessary to have a central power; it may be in some Board already existing.

4333. Who are to define how those articles are to be made?—I should say that they would define what would constitute the adulteration of those commodities.

4334. For example, taking the article of beer, a great many commodities are put into beer, according to the district and according to the water; how would you deal with that article?—I would check pernicious adulteration.

4335. You would prevent the insertion of cocculus indicus?—Yes.

4336. Is there any other article the use of which you would prevent?—I would prevent the insertion of tobacco, and I would prevent the admixture of sulphuric acid, which I believe is added to make new beer into old beer, to make it taste acid, and that is an injurious adulteration.

4337. Your plan then embraces this, that you would propose to establish a Board, that should draw up a code of regulations as to the articles which are to compose beer, and every other manufactured article which is consumed by the British public?—I would not state that.

4338. Viscount Ebrington.] You are aware that the use of sugar in beer is sanctioned by the Excise Regulations, which do proscribe other mixtures with beer, are you not?—I am aware that for the purpose of the revenue the public are protected to a certain extent.

4339. Mr. Moffatt.] Are you aware that the Excise have only sanctioned the use of sugar in beer within the last five years?—I am not.

4340. Mr. Gregson.] Without prescribing what the contents of the commodity should be, you would merely prohibit adulteration?—I would prohibit adulteration.

4341. Mr. Wise.] If I understood you correctly when you stated that you would give some department of the Government the power to publish a schedule with reference to adulteration, you meant to state that alum in bread, all uncongenial mixtures, certain colouring matters, and things of that sort, should not be used?—Certainly.

4342. You did not mean that the composition of all articles of food should be defined?—It should not be defined what I should take for dinner.

4343. Then if I understand you correctly, you would apply to all articles of food the principles of the Bread Act?—Yes. I take the Bread Act to be an Act of Parliament for the purpose of prohibiting the adulteration of bread.

4344. How do you account for this, that that Act, which has existed so many years, has been comparatively obsolete?—The fact is, you have had no officer whatever appointed to detect the adulteration of bread, and there has been a disinclination to proceed in this matter until the last few years. It was thought to be an evil of life to which people were obliged to submit, and there is always an odium resting on private individuals who interfere in such matters.

4345. Do you think that if officers were appointed, the public would be more disposed to avail themselves of that Act of Parliament and take their bread to be analysed to a public analytical chemist appointed for the benefit of the public?—Not if they were themselves to be the prosecutors. I think in that case the evil would be much in the same condition as it is at present. I think that officers should be appointed to look after adulterations.

4346. Do not you think that the very fact of appointing public inspectors would prevent adulteration?—Yes, to a certain extent.

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4347. You

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4347. You have been asked with reference to the number of persons that would be required, and the enormous expense that would be entailed upon the country by such a system; do not you think that if one analytical chemist were appointed per union, that would be sufficient; are you aware how many unions there are?—No.

4348. Do you think it would be a beneficial arrangement that every Board of Guardians should appoint an inspector of that sort?—I think any public body in the country appointing an officer of that kind would be beneficial.

4349. Would it not be better received in the provinces if the Board of Guardians appointed the inspector rather than the Government in the metropolis?—That requires thought. I think if this officer was appointed by the town council, and was held responsible to that town council, you open directly the door to unfair dealing; perhaps if he were appointed by the Board of Guardians there would be less of that influence brought to bear upon him; if he were not removable by the town council, and complaints were forwarded to some public authority, he would be perfectly independent of the local authorities.

4350. What measures would you recommend with regard to the sale of drugs and medicines?—That the seller should be held responsible; and perhaps it might be desirable to have some inspection at the ports. I am aware that drugs may be admitted into this country which may be impure, for the purpose of prescription, and still be sufficiently valuable, so that their active principles may be extracted. I should give authority to the General Board of Health to regulate the quantity and strength of drugs and chemicals.

4351. Do you think that the chemists and druggists of this country might be licensed?—I should say very beneficially so to themselves; for many men commence keeping druggists' shops who are incompetent, and have not the proper information with regard to drugs, and if you had some system of licence for chemists and druggists you might then have some qualification for that licence, and hence you would secure a better class of persons. The Pharmaceutical Society have done a great deal to improve the position of the chemist and druggist who is a member of that society.

4352. Inasmuch as it would require a scientific person to examine the stock of a chemist and druggist, what course would you recommend with regard to that inspection?—I think that the inspection of drugs might very well rest with the officers appointed for the inspection of food.

4353. Do you think that all the chemists' and druggists' shops of the metropolis could be inspected properly by the same parties who had to inspect tea, coffee, and bread?—I think that inspection should not be resorted to except after a conviction, and perhaps conviction several times. I think that inspection is a thing that might be very strongly resisted on the part of the traders of the country; if the seller was held responsible for the purity of his commodity, you then directly make it his interest to procure the best articles he can, and if he had an opportunity of ascertaining whether those articles were adulterated or not, I think he ought really to be held responsible.

4354. Are you not aware that the College of Physicians have now some power with reference to the inspection of drugs?—Yes; but that power is not sufficient. If you had public officers they would be under certain control; and if inspection is resorted to for the purpose of preventing adulteration, I think you should take the article after it has passed the counter, and not take a mere inspection; it would be quite possible for a man to say, "Here is my drug;" and place before the inspector a very good article, keeping back the adulterated article; or he might adulterate the article after the inspector had gone.

4355. As regards drugs, you think that it would be rather desirable than otherwise to have an inspection on importation?—I think so.

4356. Do you think that a small duty for the sake of securing public inspection, might be advantageously levied on all drugs?—Yes; I think that a duty on drugs imported would certainly cause an examination of those drugs, and would tend to the protection of the public by preventing the introduction into the country of impure samples; for instance, scammony.

4357. In your opinion, a very small duty would not tend to produce adulteration by the increase of price?—No; I think if you had a duty placed on chicory, provided you could prevent the adulteration of chicory, that would be an advantage to the consumer. If you brought up the price of chicory to the price of

of coffee, then it would not be worth the while of the retailer to adulterate his coffee with chicory.

4358. Mr. Moffatt.] With regard to the last illustration you have given, if you put a duty upon imported chicory, would you put a duty upon home-grown chicory also?—Certainly.

4359. Would you place an Excise duty on the article of chicory?—Yes; not on the chicory as it is sold.

4360. On the root?—Yes.

4361. Are you aware that whatever adulteration may occur in chicory, cannot occur in the chicory root, but must be in the manufactured article?—I would place the duty of course on the manufactured article.

4362. Are you aware whether chicory is imported in the manufactured state or in the root?—I believe it is imported both as a manufactured article and in the root.

4363. Are you not aware that the great bulk of the chicory is simply imported in the root?—I have seen chicory imported manufactured.

4364. Is not nine-tenths of the chicory imported, imported in the root?—I am not aware.

4365. Are you aware of the process by which chicory is manufactured?—It is roasted, and then ground up.

4366. Are you aware that as soon as it is roasted the special qualities which enable it to be mixed with coffee begin to deteriorate and to evaporate?—No doubt, like every other vegetable substance, if it is kept in a damp place it would undergo decomposition.

4367. Would it not follow that importing chicory in a roasted state must be very disadvantageous to the quality of the chicory?—Certainly.

4368. Mr. Wise.] I asked you whether you thought it would be desirable, for the sake of the protection of the public with regard to medicines, that a small duty should be put upon drugs, so as to secure inspection?—Yes.

4369. Mr. Moffatt.] Are you aware that 15 years ago there was a small duty upon every description of drug?—Yes.

4370. Did that secure purity in the drugs imported?—I am not in a condition to answer that question of my own knowledge. I have had no connexion with the importation of drugs; from my own experience, I should say not. It may not follow as a necessity that if you have a duty you would have an inspection; but I think that if you had the duty you would be likely to have the inspection.

4371. Do you propose an inspection of drugs at the various ports?—Yes; that you shall have the power of inspection.

4372. With a view to prevent the importation of any drugs which are impure?—Of course; as concerns the question of purity and impurity, you might have a law that impure drugs should be imported for certain purposes.

4373. What do you propose on that subject?—If you have a sample of scammony which is adulterated, and the active principle in it would amount to seven per cent., that scammony ought not to come into consumption; but I still think that the resin in the scammony might be useful for certain purposes. If you have some central authority fixing the standard and the quality of the drugs to be sold, then at once you get rid of impurity.

4374. Fixing the amount of impurity in each description of drug imported, and if they contain a greater amount of impurity than that fixed by the tariff or schedule, they are to be excluded from being brought into this country?—I would not exclude the importation of impure drugs, but I would prevent their sale and use for medicinal purposes.

4375. Viscount Ebrington.] As I understand you, you look rather to preventing their being retailed for medicinal purposes than to preventing their importation?—Certainly.

4376. Are you not of opinion that although an impure drug may be too bad to be retailed in its present shape, it yet may contain a sufficient amount of valuable ingredients to be quite worth while importing for the sake of extracting those valuable ingredients; for instance, from bad opium morphine in a state of purity may be extracted, and afterwards retailed in the shape, not of impure opium, but of pure morphine?—Yes. To illustrate your Lordship's question, I may give this reply to it: A sample of gum opium was placed on my table at Leeds,

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containing

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Mr. J. Postgate. containing one per cent. of morphia; that would be a very bad sample for medicinal purposes, but a good manufacturing chemist could extract that one per cent. of morphia, and he ought to have the privilege of doing so.

4377. Mr. Moffatt.] How would you propose to deal with drugs having so large an amount of impurity as that assumed by the question of Lord Ebrington; would you preclude them from being taken into home consumption?—I believe, as is done in America, that the purity of the drugs, as used by the public, should be fixed.

4378. If there is a greater quantity of impurity than that prescribed in the schedule, you think that those drugs should not be allowed to be brought into home consumption?—Certainly.

4379. You would not allow them to be bonded for home use?—I am not able to give a proper reply to that question. A manufacturing chemist might go to the docks and purchase a lot of impure drugs. Supposing you had a sample of bad bark, it might contain some quinine, and a manufacturing chemist could extract it, and it would be very good quinine for the purpose for which quinine is prescribed; but if he took that bad bark and ground it up, and then sent it round to the druggists as bark, I think that it would be a very undesirable thing, and I think it ought to be prevented. I would allow a certain range.

4380. With respect to inferior drugs, you would allow the wholesale chemists to take them, get the good out of them, and reject the dross?—Yes.

4381. What security would you have that when a manufacturing chemist bought those inferior drugs at a very low price, because they would be out of the competition of the general market, he would confine himself to extracting the good properties from those drugs and throwing away the refuse?—You would have the security of the seller; the seller could not dispose of those drugs; having obtained them as imported, he would be a very dishonest man if he did so, and they would be returned on his hands.

4382. Assuming that he cannot sell those drugs, is not the principle self-acting, by which the article protects itself?—Unfortunately the seller is interested in selling an impure article, because he can purchase the impure article at a less price than he can the pure article.

4383. If he can purchase the impure article at a still less price than he would otherwise be able to do, in consequence of the goods being out of the competition of the market by the course which you recommend, would not that operate as an inducement to vend the impure article?—I think not, if you had an officer appointed to look after his proceedings.

4384. To look after the proceedings of the manufacturing chemist?—The seller.

4385. The seller is the wholesale druggist of London?—It would first be the retailer purchasing from the wholesale dealer; if you make the seller responsible you make him directly interested in procuring a genuine commodity; and until he is made responsible he will purchase such commodities as he can get at a low price.

4386. Will it not, in the matter of drugs, be almost impossible to ascertain accurately whether the drugs he is vending have that precise quantity of purity that you are proposing to lay down in the schedule that they should have?—It would be very difficult for some men in the drug business to do so. If a druggist had the means of obtaining that information by the payment of a fee, it would be an advantage to him to do so, and an advantage to the public.

Veneris, 2<sup>o</sup> die Maii, 1856.

MEMBERS PRESENT.

Mr. Scholefield.	Mr. Wise.
Mr. Moffatt.	Viscount Ebrington.
Mr. Sheridan.	Mr. Peacocke.
Mr. Cowper.	Mr. Alderman Cubitt.
Mr. Gregson.	Mr. Kinnaird.
Mr. Knight.	

WILLIAM SCHOLEFIELD, Esq., IN THE CHAIR.

George Moffatt, Esq., a Member of the Committee; Examined.

4387. Chairman.] I BELIEVE you have a Return from the Inland Revenue Office which you wish to put in Evidence?—Upon looking over the evidence, I found the Committee had no return and very little information with regard to the number of licenses issued from the Board of Inland Revenue within the Bills of Mortality; consequently I wrote to the Chairman of that Board for a return, which return I now hold in my hand. It will be found from an abstract of the return, that the number of tea and coffee licenses granted within the Bills of Mortality are 7,811; licenses for the sale of wine, beer, and spirits, 14,138; licenses for the sale of snuff and tobacco, 16,723: the total number of Excise licenses thus issued in the year 1855 was 48,750.

G. Moffatt, Esq.,  
M. P.  
2 May 1856.

[The Return was delivered in, and is as follows:]

A RETURN of Number of EXCISE LICENSES Issued within the Bills of Mortality, in the Year 1855, classified in Trades.

DESCRIPTION.	Number of Licenses Issued.	DESCRIPTION.	Number of Licenses Issued.
Auctioneers - - - -	597	Rectifiers and distillers - -	47
Brewers - - - -	136	Soap-makers - - - -	42
Beer dealers - - - -	240	Spirit dealers (not retailers) -	20
Beer retailers (publicans) * -	4,859	Spirit dealers retailing foreign	
Beershop keepers - - -	2,525	liquors - - - -	42
Chemists (using stills) - -	79	Spirit retailers (publicans) * -	4,827
Dealers in tea, coffee, &c. -	7,811	Spirits, makers of Methylated -	7
Maltsters - - - -	6	Sweets, retailers - - - -	1,385
Malt roasters - - - -	6	Tobacco and snuff manufacturers	118
Dealers in roasted malt - -	15	Tobacco and Snuff dealers - -	16,723
Paper-makers - - - -	16	Vinegar makers - - - -	12
Passage vessels (on board of which		Wine dealers - - - -	653
liquors are sold) - - - -	33	Wine retailers (publicans) * -	4,452
Persons licensed to let horses for		Stage carriage licenses - - -	1,065
hire - - - -	113	Hackney - ditto - - - -	2,421

\* It is to be observed, that the licenses to publicans to retail beer, spirits and wine, are for the most part issued to the same persons.

The bills of mortality comprise the cities of London and Westminster; the parishes of St. Mary-lebone and St. Pancras; the borough of Southwark; the parishes of St. Dunstan, Stepney; St. George, Bloomsbury; St. George, Middlesex; St. George, Queen's-square; St. Giles-in-the-Fields; St. James, Clerkenwell; St. John's, Clerkenwell; St. John's, Hackney; St. John's, Wapping; St. Katherine, Tower; St. Leonard, Shoreditch; St. Luke, Middlesex; St. Mary, Islington; St. Mary, Lambeth; St. Mary Magdalen, Bermondsey; St. Mary, Newington; St. Mary, Rotherhithe; St. Mary, Whitechapel; St. Matthew, Bethnal-green; and St. Paul, Shadwell.

Inland Revenue Office,  
1 May 1856.

L. S. Lyne, A. & C. G.



Arthur Hill Hassall, Esq., M. D., called in; and further Examined.

A. H. Hassall,  
Esq., M. D.

2 May 1856.

4388. *Chairman.*] PERHAPS you will briefly refer to the diagrams with which you have been kind enough to furnish the Committee, pointing out what you think is necessary, with as little detail as is consistent with what you desire to state?—These diagrams I have had prepared in order to illustrate the application of the microscope to the discovery of adulteration. They represent the appearances presented by various articles under the microscope, some of the articles being in a genuine and others in an adulterated state. I would refer particularly to the diagrams of chicory and coffee. It will be perceived that the differences in the structure of the coffee berry and chicory root are very considerable. The first and second diagrams represent the structure of the coffee berry, the first the unroasted, and the second the roasted berry; the third diagram represents the appearance of roasted chicory root under the microscope. It was not long since it was considered almost impossible to distinguish between roasted chicory and roasted coffee, when they were mixed together, and it was almost impossible to do so until the microscope was applied to the discrimination; but, with that instrument, nothing is more easy.

4389. How long is it since the microscope has been used for that purpose?—About five years. Now the differences between a great number of other vegetable substances are equally striking with those which exist between chicory and coffee. I have now examined altogether many hundreds of vegetable productions, and in very few cases have I been unable to distinguish the one from the other. I may observe that that remark applies to nearly every vegetable drug. I have gone over with the microscope every vegetable article contained in the *Materia Medica*, and there is scarcely any that may not be distinguished the one from the other by means of the microscope, and this even when reduced to powder, and after they have been roasted in the ordinary manner. I have but little additional information to give to-day regarding the adulteration of articles of food. The evidence which I propose to give relates principally, but not entirely, to drugs. There are, however, one or two points in connexion with a few articles of consumption, to which I would wish to refer before proceeding to speak of the adulteration of drugs. The first is flour. I have the authority of a gentleman connected with a flour mill, near Cambridge, for stating that either rice or bean flour is very commonly added to wheat flour in small proportions. It is stated that the object with which those additions are made is to cause the flour to bind better when made into bread, and that they are not made for the purpose of adulteration, but that certain qualities of wheat are improved, in the way I have mentioned, by the addition of small quantities of bean and rice flours. I would remark, that when the wheat flour is of good quality, I consider that there is no necessity whatever for any such additions. I have on several occasions met with alum in flour. A good deal has been said by various witnesses as to the state in which that substance exists in bread. Some maintain that it is decomposed, and that, in consequence of its decomposition, it is no longer injurious. I think it right that the Committee should be made acquainted with the views of Baron Liebig upon this subject. Baron Liebig considers that alum, when well incorporated with the flour, is decomposed; the phosphoric acid of the phosphates of the wheat flour uniting with the alumina of the alum, and so forming an insoluble phosphate of alumina. Now, Liebig regards the soluble phosphates of wheat flour as one of its most important constituents, and he states that when alum is used, the phosphates are lost to the system in consequence of the insoluble condition to which they are reduced. Liebig therefore strongly condemns the use of alum, and where a very white bread is required, he has been in the habit for years past of recommending the employment of a small quantity of lime-water. This recommendation, I think, he first made in this country at a meeting of the British Association in Scotland, I believe at Glasgow, and in consequence of that recommendation it has been used to some extent in Scotland, and particularly in Glasgow; the lime-water having the same effect as alum in whitening the bread. If these views of Baron Liebig are founded in fact, (and any opinion which Baron Liebig entertains upon a chemical question is entitled to the greatest respect), it shows how dangerous a thing it is to tamper with prime articles of consumption like bread, by the introduction of chemical salts and substances.

4390. Mr.

4390. Mr. *Wise.*] Did he state what proportions of lime-water might be used?—I believe the quantity recommended was one wine-glass full to the quarter loaf. I was going on to observe that, supposing, however, it could be proved that the presence of alum in bread is not directly injurious to health in any way, yet certain objections would still remain to the employment of alum; one of those objections is, that it causes the bread to hold more water than it would otherwise do, and of course the greater the quantity of water, the less the quantity of wheat flour. The next objection to the employment of alum is, that it improves the appearance of flour without improving its quality; hence flour not of the first quality might be made to assume the appearance of flour of that quality, and this would allow of, in some instances, what is hardly legitimate, the passing off an inferior article for one of superior quality. In the evidence which I gave on a former occasion before this Committee, I stated the results of certain inquiries which I had made into the condition of coffee in France and Germany. I said that I had found that the coffee served up in the first-class hotels and restaurants was pure, that it was not mixed with chicory, but that the coffee met with in inferior restaurants, in small establishments, and especially that used amongst domestics, often contained chicory, but that the quantity of chicory which was employed seldom exceeded about two ounces to a pound. I have made some additional inquiries into this subject, and the result has been to confirm the statements which I then made to the Committee upon this point. In the course of my inquiries a very remarkable circumstance has been related to me with regard to the properties of chicory; it is, that mothers in France, and in Germany too, are sometimes in the habit of administering a strong infusion of chicory, or of chicory and coffee mixed, to children, in place of medicine, it being found that this strong infusion operates as an aperient; it is of course preferred to medicine, in consequence of its not possessing the unpleasant taste of ordinary medicine when mixed with milk or sugar. I have brought with me some specimens of adulterated tea, some of these are artificially coloured with Prussian blue, turmeric, and some white, earthy powder; others, as the caper and scented orange pekoe, are faced with black lead, while another consists of artificially coloured green tea, mixed with the spurious article termed Lie tea. I went into the subject of the adulteration of tea fully in my former evidence; but in consequence of its having been stated before this Committee that it was impossible to procure a sample of adulterated tea, I thought it desirable to bring one with me this morning. It was purchased on Wednesday last, and it contains a certain quantity of lie tea mixed up with it.

4391. *Chairman.*] Was it purchased at a retail establishment?—The name of the party is upon the label. In my first evidence I stated that annatto, the substance employed to colour cheese, butter, and milk, was largely adulterated. I have since carried my investigations into the adulteration of that article still further than I had done previously, and I find that it is adulterated to a very large extent indeed. I have found in some samples as much as 63 per cent. of carbonate and sulphate of lime; in other samples a considerable quantity of turmeric; and again in other samples, from 40 to 50 per cent. of flour of different kinds; flour of wheat, rye, barley, and so on. I beg to hand in a communication on the subject of adulteration of annatto, which, if it is thought desirable, might appear in the Appendix (*handing in the same*).<sup>\*</sup> Of all the adulterations practised upon articles of consumption, none are more important, in consequence of the injury which they entail upon health, than are those of coloured sugar confectionery. I entered fully into that subject in my first evidence; but I have brought with me this morning a variety of samples of coloured sugar confectionery; to many of the samples I have appended the names of the pigments with which they are coloured; those pigments include salts of lead, of copper, and of arsenic; the whole of the samples have been purchased within the last few months, and some of them even within the last few days. However, there is a very great improvement in the condition of those articles as vended now, compared to the state of things which existed some two or three years back. One would now have some considerable difficulty in getting a large number of samples as vividly and injuriously coloured as those are upon the table; one might do so in the course of five or six days' search; whereas formerly almost as many samples might have been obtained from the first shop one entered for the sale of these things. I will now proceed

A. H. Hassall,  
Esq., M. D.

2 May 1856.

CHICORY.

TEA.

ANNATTO.

SUGAR  
CONFECTIONERY.

<sup>\*</sup> On the Adulteration of Annatto; "Pharmaceutical Journal," January 1856.

A. H. Hassall,  
Esq., M. D.

2 May 1856.

LIQUORICE.

proceed to speak of the adulteration of certain drugs. In my first evidence I described the adulterations to which four of the most important articles of the *Materia Medica* are subject; namely, jalap, ipecacuanha, scammony, and opium. On the present occasion, I will speak of the adulterations to which certain other drugs are subject; and first of liquorice. I speak of the adulteration of liquorice, not because of its importance, as a drug, but because it is an article which is very extensively employed, because the duty upon it furnishes some thousands to the revenue annually, and because also the adulteration to which it is subject appears to me to form part of a system of adulteration which exists as to other and more important articles of the *Materia Medica*. Of 21 samples of *roll* or foreign extract of liquorice analysed, every one was found to be adulterated; the substances employed for the purpose of adulteration being various kinds of starch or flour, as those of rice, wheat, barley, rye, and potato, and cane sugar, gum, and chalk. Genuine extract of liquorice dissolves without leaving any residue; those of the adulterated liquorices weighed, when deprived of moisture, from 18 to 42 per cent.: of the *pipe* liquorices, commonly called refined liquorice, all were likewise adulterated, and this generally to a greater extent than the *roll* liquorices; they furnished insoluble residues, consisting, for the most part, of different kinds of starch, varying from 34 to 41 grains per cent.; they usually contained cane sugar, and the pipes were generally enclosed in a tube of gelatine of the coarsest description, but little superior to common glue. The *Pontefract* lozenges examined furnished equally large residues, and they contain cane sugar. To such an extent is the adulteration of pipe liquorice carried, that it often contains not more liquorice than is sufficient to flavour the article. Of 28 samples of *powdered liquorice* subjected to examination, at least 11 were adulterated as follows: one consisted chiefly of wheat flour; one contained a large quantity of wheat flour; two, much foreign woody fibre; two, woody fibre and turmeric; another, woody fibre and wheat flour; one was made up chiefly of Indian corn, potato, and sago flours, and turmeric; another of sago, woody fibre, and much turmeric; another of damaged East Indian arrowroot, and a little turmeric; and another consisted almost entirely of potato flour, a little wheat flour, and turmeric. The last preparation of liquorice examined was the extract of the *Pharmacopœia*. In order to ensure a genuine article, a form is prescribed for the preparation of this extract; of 10 samples, six were found to be adulterated, and to consist merely of the foreign extract melted down; 14 of the foreign *roll* liquorices, as well as several of the liquorices sold as the *Pharmacopœial* extract, contained copper, derived from the vessels in which the extract was prepared. It thus appears that liquorice is adulterated to an enormous extent. It should be remembered that powdered liquorice is prepared by the drug grinders, and that it is furnished to the chemist and medical man by the wholesale druggist; its adulteration therefore lies mainly between those two parties. I should state that in all cases the powdered liquorice was labelled by the parties of whom it was purchased, and in no single instance was it acknowledged that the article so supplied was a compound article. I have brought with me several specimens of adulterated powdered liquorice, and the names of the parties of whom they were procured are written upon the bottles. I have not given the addresses, but I have the whole particulars at home, which I can furnish if I am required to do so.

4392. Mr. *Sheridan*.] Is not powdered liquorice used for the purpose of rolling pills in?—Powdered liquorice is used for the purpose of rolling round pills almost entirely.

4393. Mr. *Wise*.] Is not a very large proportion of liquorice-powder used in pills?—Pills are enclosed almost always in powdered liquorice.

4394. So that when a person takes pills, he must take a portion of liquorice?—He would take some.

4395. Is not the active medicine which is put into pills a very small portion of the bulk?—No; the powdered liquorice merely coats the surface of the pills.

4396. Mr. *Sheridan*.] None of those adulterations of powdered liquorice are deleterious to health, are they?—The adulterations of powdered liquorice are not deleterious to health; but it is wrong to sell as liquorice an article which consists of a variety of ingredients, and not of liquorice; that is not known or supposed to be the case generally, or the article would be less employed.

4397. Does not the chemist use the powder himself?—He does; but he is not at all aware that it is not what it professes to be in the majority of cases. Turmeric, which, as we have seen, is employed to a considerable extent in the adulteration

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adulteration of powdered liquorice is itself adulterated. I have one sample upon the table, which contains as much as 20 per cent. of yellow ochre; I find also that turmeric very frequently contains a considerable quantity of alkali, which is added to it for the purpose of increasing the colour of the powder; alkalies exerting a remarkable effect upon the colour of vegetable substances. I think the introduction of alkali into turmeric powder is, in some instances, objectionable, because turmeric powder enters largely into the composition of curry powder, and on that account I think the presence of much alkali is objectionable.

4398. Viscount *Ebrington*.] Alkali exercising a decided influence upon the health of those who take it, either for good or evil, as the case may be?—Exactly; in some cases it might be beneficial, and in other cases it would be undesirable. Another drug which I have found sometimes to be adulterated, is powdered rhubarb; I have met with samples of powdered rhubarb adulterated with turmeric, and there is a sample upon the table which contains a considerable quantity of wheat flour; powdered squills I have found to be adulterated with wheat flour. Other drugs which I have recently examined and found to be adulterated, are colocynth, compound scammony powder, and aromatic confection; powdered colocynth frequently contains large quantities of the seeds of colocynth, and those ought never to be present; in the directions given for preparing powdered colocynth, it is expressly stated that the seeds should be removed; I have also met with wheat flour both in the powder and in the extract of colocynth, and in the latter I have met with chalk. Colocynth is one of the most valuable purgative medicines contained in the *Pharmacopœia*, and its adulteration therefore is a matter of considerable importance. Another most important medicine is the compound scammony powder; this consists of three ingredients, namely, scammony, hard extract of jalap, and ginger; now two of those ingredients are very liable to adulteration, namely, the scammony and the powdered ginger, while the powder of jalap is very frequently substituted for the extract, although it is not more than about one-fourth of the strength of the extract. Of 10 samples of powdered scammony, I found chalk in greater or less proportions in all; wheat flour in three, and powdered jalap in three. The last medicinal preparation of which I propose to speak is aromatic confection, a very valuable remedy in the treatment of diarrhoea; this should consist of cinnamon, cloves, nutmegs, cardamoms, saffron, prepared chalk, and sugar, and it is consequently a somewhat expensive preparation. I find that the more expensive ingredients are frequently omitted, and others sometimes substituted, as turmeric in place of the saffron, essence of cassia for the cinnamon, and chalk for part of the sugar. I believe it would be by no means difficult to multiply examples of adulteration in drugs, were it either desirable or necessary; but I think enough has been stated, not only on this occasion, but in the evidence of many witnesses who have been before this Committee, to show that medicines are frequently adulterated to a very large and serious extent. I have brought with me, this morning, samples of adulterated jalap, rhubarb, ipecacuanha, squills, opium, scammony, colocynth, liquorice, turmeric, and aromatic confection. Medicines give rise to different actions and effects, according to the doses in which they are administered. To determine the exact doses of different remedies, and their corresponding actions and effects, has for years past been made the subject of careful observation and experiment by physiologists and others. To adulterate medicines is almost to destroy the value of such labours and inquiries; it is to introduce into the practice of medicine the greatest uncertainty and confusion; it is in many cases to defeat the wisest and best-directed efforts of the physician. Medicines are the chief agents employed in the treatment of disease; how all-important it is, therefore, that these agents should be pure and genuine. So long as the adulteration of drugs is permitted to continue, it is hopeless to expect that any great progress should be made in practical medicine. Disease is surely complicated enough, and difficult enough to cure, without the complication and the difficulty being enhanced by the practice of adulteration.

4399. Mr. *Wise*.] Do you believe that those adulterations take place principally previous to importation, or by the drug-grinders, or by the druggist who sells them?—In the case of certain drugs, the adulteration takes place previous to importation, mainly; in the case of scammony, for example, the adulteration is practised abroad mainly; in the case of other articles, the adulteration takes place at home frequently by the drug-grinders; and in some instances, I fear, we must come to the conclusion that either the wholesale or retail chemist or druggist

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druggist is a party to the practice. I think more generally the drug-grinder is at fault.

4400. So that in seeking a remedy, we must first look to importation; secondly, to the drug-grinder; and thirdly, to the vendor?—I think it would be necessary to make that distinction in any legislation upon the subject. I would now beg to be permitted to make, in a very brief manner, certain corrections of the evidence of Mr. George Phillips, of the Excise, and of Mr. Clapperton. In reply to Question 2483, put by Mr. Villiers to Mr. Phillips, these remarks occur: "I found my opinion upon my own experiments. If I understand his statement aright" (referring to myself), "he examined beer by means of acetate of lead; I think it was so stated in the 'Times,' but I refer to it under a doubt. If Dr. Hassall examined samples of beer with acetate of lead, and judged of them from that, it was a most fallacious conclusion to arrive at, to suppose that the beer was adulterated because a precipitate was caused by adding acetate of lead to the beer. If you add acetate of lead to any beer which ever was brewed, or will be brewed, you will have a precipitate." It is, I think, to be regretted, that Mr. Phillips, before making those remarks, did not take the trouble to ascertain whether the facts were really as stated therein; this he might easily have done by referring to my work on "Adulteration," which, however, he acknowledges in his evidence he had not read. I have now to state, that there is not the smallest foundation, in fact, for the observations above quoted, and that the process followed in the analysis of porter and stout was of the most elaborate and searching character. What that process was will be seen by reference to page 629 of my work. Stated in as few words as possible, and divested of all unnecessary explanation, it was as follows: The specific gravity of each beer was first determined, and then the amount of free acids which it contained ascertained; the alcohol was distilled off, and its amount determined, as were also the quantities of extractive, sugar and of gum; lastly, the extractive was incinerated, the ash weighed, and afterwards tested for salt and iron. This is all which I think it necessary to say upon Mr. Phillips' evidence. I will now pass on to the evidence of Mr. Clapperton, and perhaps if I do not correctly represent Mr. Clapperton's evidence, the Committee will set me right. Mr. Clapperton is reported to have stated, that an inaccuracy had been committed in the analysis of some bread purchased at his shop; that it had been said to contain alum when it did not; that this error had been acknowledged by myself, but that the charge had never been retracted. The following is a brief statement of the actual facts of the case: In 1851 some bread was purchased, in the presence of witnesses, at the establishment of Mr. Clapperton, in Mortimer-street, Cavendish-square, and after careful analysis was reported upon in the "Lancet," together with the bread of many other bakers, to the effect that it contained alum. On this Mr. Clapperton placed himself in communication with Mr. Wakley, by whom he was referred to me. Mr. Clapperton stated, that he did not use alum in the manufacture of his bread, and at my request he furnished me with four samples of the flour, obtained from as many different millers, and one sample of the salt used by him. These were subjected to analysis by two different chemists, and two of the flours, the salt, as well as the bread, were found to contain alum.

4401. Mr. Moffatt.] Are you reading Mr. Clapperton's statement, or your own?—A statement of the facts as they occurred: there being no inaccuracy in the original statement, it of course was not withdrawn. No imputation was then made, or is now intended to be made, that Mr. Clapperton used alum in the preparation of his bread; the only allegation advanced was, that the bread contained the substance in question, and necessarily so, since the ingredients of which it was composed themselves contained alum; and to the accuracy of that statement I am still prepared to adhere. In placing the various samples in my hands for analysis, Mr. Clapperton observed that he felt assured that we would do him full justice; and again, on the result of the analysis being communicated to him, he expressed his entire satisfaction at the manner in which his case had been investigated. In corroboration of this account, I am able to quote certain passages from one of the reports on bread, published in the "Lancet," which fully confirm the statement which I have just made to the Committee, but perhaps it is unnecessary for me to detain the Committee by any more lengthened explanation. Mr. Clapperton, I should mention, remained in business for nearly five years after the publication of the result of the analysis of his bread and flour.

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4402. Mr. Peacocke.] By whom are the reports in the "Lancet" made?—The reports in the "Lancet" were all written by myself.

4403. Mr. Wise.] If I understand you correctly, you never stated that Mr. Clapperton put alum in his bread; you only stated that alum was found in the flour?—Exactly so; in the bread and flour.

4404. It might have been there without Mr. Clapperton's knowledge?—We considered that it was, so far as we could judge from the facts which were brought before us.

4405. Mr. Moffatt.] You have stated that Mr. Clapperton continued in business for five years afterwards; are you aware that he stated that your report had done him serious injury, had damaged his trade, and in fact ruined him?—I am aware that that statement appeared in his evidence in the daily journals, and it was on that account I thought it right to remark that he continued in business five years after the publication of the analysis in question.

4406. Mr. Peacocke.] Would not showing up any case of adulteration very much injure a person's trade, and probably very nearly ruin him?—I do not think it would have so serious an effect. I think nearly all those persons reported in the "Lancet," and who were found to vend adulterated articles, have continued to conduct their businesses. The exposure may in some instances have damaged their business.

4407. Mr. Moffatt.] Are you also aware that Mr. Clapperton, in self-defence, on your declaring that his bread was mixed with alum, had the bread analysed by other men of high standing as chemists, who declared there was no alum in it?—I cannot tell exactly what Mr. Clapperton did in reference to the matter; he stated to me that he placed his entire case in my hands, and that he should consult no one else. I believe it was reported that he consulted Mr. Bachoffner, but it is not stated whether he placed in Mr. Bachoffner's hands four samples of flour for analysis, and the bread and salt, or whether he placed in Mr. Bachoffner's hands only one sample of flour.

4408. Are you aware that Mr. Clapperton alleges that the same flour of which the bread was made that you had taken from him, and which you declared to contain alum, was subsequently analysed by two other competent persons, who certified that it contained no alum; those two persons being Mr. Pepper and G. W. Bachoffner?—I was not aware that Mr. Pepper had been consulted. As I before observed, Mr. Clapperton placed in my hands, not one sample, but four different samples, of flour; some of those flours contained alum, and others did not.

4409. Chairman.] I do not understand you as denying at all that Mr. Clapperton may have consulted other persons?—Not at all. Mr. Clapperton stated in his evidence that a mistake had been committed, had been acknowledged, and was not withdrawn. I, in reply to that, state that no mistake occurred; therefore nothing could be withdrawn, and nothing was withdrawn.

4410. Mr. Moffatt.] Are you aware that Mr. Clapperton stated that the sample of flour from which the bread was made, in which you found alum, was submitted to two other chemists, and they found no alum?—The samples of flour which were furnished to me, in which alum was present, were not submitted to any other chemist. Whether Mr. Clapperton took samples of the same flour to other chemists, and asked them to examine it, I cannot state; but no portion of the flour entrusted to my care was examined by either Mr. Bachoffner or Mr. Pepper.

4411. You are not aware that Mr. Clapperton does state most expressly and distinctly that the flour was taken from the same bulk which the other two chemists examined?—I am merely desirous that it should not be understood by the Committee that a portion of the flour entrusted to myself for analysis was sent by Mr. Clapperton to other chemists for the purpose of analysis, and was not found to contain alum.

4412. Are you aware that Mr. Clapperton complained to the Committee that he endeavoured to test the accuracy of your analysis by getting from you or from Mr. Wakley a portion of the substances which had been submitted to you for analysis, and that Mr. Wakley refused to give up either of those substances?—I cannot say what transpired with regard to the refusal to give up a portion of the bread. I only know this, that Mr. Clapperton waited upon me on the subject; I gave him every information that I could. I investigated the case for him as fully as possible, and he expressed his entire satisfaction at the way in which he

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had been treated throughout the case. His own satisfaction is expressed in print in the report contained in the "Lancet," made in 1851, and to which I have already referred.

4413. Mr. *Sheridan*.] Did Mr. Clapperton ask you to return any portion of that flour?—I do not remember whether he did or did not. A question might arise in such a case, how far it would be proper to give up to any person making the application a portion of the bread upon which a report had been founded; it might be quite proper to place that bread in the hands of parties mutually agreed upon, but it might not be proper to give it to any one who applied for it.

4414. *Chairman*.] There is one point to which I wish to call your attention, because it affects, to a considerable degree, the value of your evidence with regard to your microscopical examinations. It has been stated to the Committee that it is impossible for any one to carry on effectually more than about 20 or 30 examinations a week; that even those 20 or 30 examinations a week would occupy several persons; now if that is the fact, it is quite clear that the number of microscopical examinations which you have carried on could not have been carried on by yourself; as that places your evidence in rather a peculiar light, I should be glad to hear from you some explanation that there is an error in supposing that microscopical examinations cannot be carried on to a greater extent than 20 or 30 a week?—One great advantage in the employment of the microscope in the detection of adulteration is the greater comparative rapidity with which results may be arrived at. As to the number of microscopical examinations which may be made by one person in the course of a week, that will depend upon the skill and knowledge of the examiner, and also upon the nature of the article examined. In the course of the publication of the reports in the "Lancet" my practice was, to examine some 20 or 30 samples, on the average, microscopically, per week, and to report upon those. But at the present time I think there is scarcely an article of consumption upon which I could not undertake to give a satisfactory report to the extent of 100 samples per week at least. I am speaking within bounds; and if it were a case of great urgency I could increase the number considerably. Where you have chemical details to deal with, and chemical analyses to make, the reports would sometimes occupy some weeks, and even months; some of the reports in the "Lancet" took as much as six or eight weeks to prepare; some of the microscopical reports were prepared in the course of a week or a fortnight. I should mention, that before the publication of the first report in the "Lancet," a stock of reports were prepared in readiness; because the reports appeared weekly, it does not follow that those reports were prepared and written within the week; they were prepared in advance usually.

4415. Virtually, at the present moment, you could conduct as many microscopic examinations as 100 a week?—There is scarcely an article of consumption which I could not examine to the extent of 100 samples a week readily.

4416. Mr. *Peacocke*.] Could you procure assistance by allowing other persons under your superintendence to do the mechanical part of the analysis?—No doubt; it would not be difficult to find others who could even make, in most cases, accurate microscopical observations.

4417. Then the responsibility would not rest upon yourself?—To a certain extent others could do the rougher part of the work; they could put up the objects in slides, and state that they found such and such things to be contained in the samples. Nothing would then be necessary for me to do but to go over their results, and ascertain that they were accurate.

4418. Could you ascertain that as truly as if you had gone through the analysis yourself?—By a certain well-regulated plan of proceeding I could.

4419. By adopting that system could not you make more than 20 or 30 microscopical examinations a week?—By following that system I could make some 200 or 300 examinations a week.

4420. Is there any test by which you can detect the presence of *cocculus indicus* in beer?—There are tests given for the detection of *cocculus indicus* in beer; but to a great extent they are not to be relied upon; the analysis is a very laborious one.

4421. With regard to the use of *cocculus indicus* in beer, I asked Mr. Rodgers, who was examined on the 9th of April, this question: "Is there any test by which you can detect the presence of *cocculus indicus* in beer?" His answer was, "Yes; it is most troublesome, but at the same time it is most conclusive; the form of the crystal of *cocculus indicus* is very conclusive as to its presence; the plan of proceeding:

proceeding is to separate everything from the beer but this alkaloid of *cocculus indicus*; this picROTOXINE bears the same relation to *cocculus indicus* that quinine does to bark; it is in a very definite form, and after getting it into such a form you could get it to a liquid condition, and subject it to microscopic examination. It is known that beer ought not to contain anything that will give a crystal, anything like the form of that which is found in beer containing *cocculus indicus*. I might remark that Mr. Herapath, of Bristol, has repeatedly done. The investigation is a laborious one, and occupies a great deal of time, and therefore unless there is some definite object in view it is rarely done." Do you concur in that statement?—I think that evidence, in the main, is correct; it is possible to detect *cocculus indicus*, but it is a matter of extreme difficulty, and requires very prolonged examination of the beer to arrive at a satisfactory result. It was Dr. Herapath who suggested that method of examining beer for *cocculus indicus*, and in his hands the thing could be done more readily than in the hands of a less experienced person.

4422. You think that answer is on the whole correct?—Yes. I should place great faith in any statement emanating from Dr. Herapath.

4423. The evidence to which I have called your attention was from Mr. Rodgers?—It is founded on Dr. Herapath's investigations respecting the detection of *cocculus indicus* in beer.

4424. *Chairman*.] Have you thought of any form of words by which adulteration can be defined?—I have bestowed some consideration upon the question as to what constitutes adulteration; but although it is easy in general to decide whether any particular addition to any substance constitutes an adulteration or not, it is not easy so to frame a definition as that it shall apply to every case of adulteration. Perhaps, in order to render the definition I am about to give a little clearer, it may be well for me to explain what does not constitute adulteration in the first instance. The sale of one article in place of another is not an adulteration, but a substitution. Again, the presence of substances in articles in consequence of impurities contained in the materials out of which they were prepared, as, for example, arsenic in the hydrochloric acid, used in the preparation of unfermented bread, does not constitute adulteration. They are simply impurities or contaminations. Lastly, the accidental presence of substances in any commodity, of course does not constitute adulteration. Excluding, then, from the class of adulterations all cases of substitution, of impurities and accidental contaminations, "Adulteration may be defined to consist in the intentional addition to an article, for purposes of gain or deception, of any substance or substances, and the presence of which is not acknowledged in the name under which the article is sold." This definition certainly embraces the great majority of adulterations, and it does not include impurities and accidental contaminations, because it specifies that the addition must be wilful and intentional. This is merely an attempt at a definition, and it is very possible that upon further consideration of the question, a better definition than this might be proposed; but, as far as I can see my way through the matter, it is the best definition that occurs to me.

4425. Mr. *Wise*.] Whilst you have given this definition of adulteration, would not you endeavour to divide it, first, by stating the adulterations that are prejudicial to health; and, secondly, those that are simply commercial frauds?—That would be a sub-classification of adulteration; I think it would be very desirable to classify adulteration, and to specify those that are particularly injurious to health, discriminately between those and others which are simply frauds.

4426. But in legislating upon the subject, or in giving instructions to public officers, would it not be a difficult matter to give the same instructions with regard to adulterations which were injurious to public health, and to those that were simply questions of public morals?—I think a distinction should be made between the two sorts of adulteration for various purposes.

4427. Could this Committee mix up the two questions?—I think they could decide that a certain number of adulterations were prejudicial to health, and that a certain number of other adulterations were simply fraudulent.

4428. Could this Committee undertake to legislate without reference to what adulterations were prejudicial to public health?—I should think so. I may not perhaps quite apprehend your question.

4429. I mean that some cases of adulteration or admixture may relate to the cloth that is used for making a coat, and a variety of other adulterations may be

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prejudicial to public health; those would require some specific definition?—I limit my definition of adulteration to articles of consumption, to food and medicines; I have not gone into the wider question of adulteration in textile fabrics, and so on.

4430. Mr. Peacocke.] Would not it be a matter of evidence at the time of trial, rather than for the Legislature to offer any specification upon the subject?—It appears to me that it would be well to have some specification drawn as a guide.

4431. To whom?—To the authorities employed who had to deal with the question of adulteration, and it would be a guide to magistrates; there would be an Act of Parliament relating to the subject of adulteration, conferring certain powers, and authorising certain penalties.

4432. Viscount Ebrington.] For instance, the substitution of wheat flour, which is innocent in itself, for some drug which is intended to have active operation, becomes most prejudicial to health, not by its presence, but by the absence of what it displaces?—No doubt.

4433. Therefore do not you consider that any adulteration of drugs retailed should be placed in the category, supposing that sub-classification to be made, of pernicious and deleterious adulteration?—Indirectly they are undoubtedly most injurious adulterations.

4434. Chairman.] There is one adulteration to which I do not think your definition applies very closely; that is an adulteration of this kind, where to an article of consumption a foreign substance has been added for the purpose of cheapening the compound; and where the public purchases that compound at a rate much lower in consequence of the cheaper material being put into it; take for instance, coffee and chicory; we will assume the value of chicory is one-fourth of the value of coffee; if coffee mixed with chicory is sold proportionately cheaper, is that an adulteration with which you think the Legislature should deal?—It depends upon whether the fact of the presence of chicory in the coffee is acknowledged or not in the name under which the article is sold. If the coffee were to be sold, although it contained chicory, without any acknowledgment that it contained that substance, it would come under the classification I have given. If it is sold labelled as a mixture of chicory and coffee, then it would not come within the definition I have given.

4435. Are the Committee to understand you to mean that every article not precisely a genuine article should be sold as a mixture?—It should be sold for what it really is, so that there should be no deception with regard to it.

4436. Mr. Peacocke.] In making up certain commodities, are not three or four articles often necessary; would you propose to specify them on paper?—The number of mixed articles of consumption is not considerable; the mixtures of drugs are known and acknowledged mixtures.

4437. Chairman.] You gave on the former occasion, when you were examined, your general views as to the remedy for this state of things; have you reconsidered the matter since you were before the Committee on the former occasion?—I have to some extent.

4438. Have you any further suggestions to offer?—I think the suggestions which I then made, in the main, were such as I should be disposed to suggest again if it were necessary that I should repeat them; but one other suggestion of some importance has occurred to me recently, and that is, that it should be rendered imperative on persons convicted of giving false weight, or selling adulterated articles, that they should keep a placard, (perhaps it is not judicious to introduce the question of false weight, but it is a matter which is of great consequence, and which might easily be dealt with at the same time), containing the text of the judgment condemning them, posted up in the most prominent part of their windows, for three, six, nine, or twelve months at a time, according to circumstances; I think that this would be a very inexpensive method of punishing adulteration, and I can hardly conceive that any method would be more effectual; I am told that it is about to be enforced in France.

4439. Viscount Ebrington.] Have you considered at all the relative advantages and disadvantages of systems of inspection, the one emanating from local authorities appointing a small number of persons to look into adulterations in general, and a system of allowing a more general authority, with a wider area of jurisdiction to appoint a greater number of persons, each to inspect some one particular

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particular class of adulterations, extending their inspection over a wider area?—It seems to me that there should be some central authority, in the first instance, under the control of the Government, but that the local appointments, the appointments extending throughout the chief towns and cities, might be under the control of the local authorities, subject to the control of the central Board, to a certain extent. I think the expense of any machinery that was put into operation for checking adulteration might be so devised that it should fall principally upon the local authorities.

4440. You see the disadvantages which may attach to a small number of inspectors having each of them the charge of examining into a great number of articles, namely, the disadvantage of less expertness, and less knowledge with reference to each article; do you think that that disadvantage would be more than compensated by the advantage of diffusing the authority in such matters amongst local authorities, instead of centralising it in the State?—I think it should be diffused amongst the local authorities as much as possible; at the same time I think there would require to be a head somewhere to regulate the operations of all the local officers who might be appointed.

4441. Do you attach very great importance yourself to great expertness in examining and knowledge of the qualities of the different articles of consumption, as qualifications for the duties of inspectorships?—A certain amount of knowledge upon that subject should be possessed, although I think it is very difficult in any case to decide as to whether an article is adulterated simply by its outward and ordinary characteristics. Very few persons would feel competent to declare an article to be adulterated from its smell or taste, although they might make a very good guess.

4442. Do you attach very great importance to an intimate knowledge of the qualities, prices, and so on, of the different articles as facilitating the choice of samples for careful and accurate analysis or examination?—I think it is very desirable that the persons who are appointed to obtain samples of articles which are suspected to be adulterated, should have a full knowledge of the properties of those articles in a genuine state; it would much facilitate their labours.

4443. You see the advantages of that expertness; can that difficulty be reconciled with very narrow areas of jurisdiction, such, for instance, as the municipalities of our small towns?—In the larger towns I should imagine that persons could be met with who were accustomed to appreciate the qualities of different articles in their genuine state, but perhaps not in the smaller towns.

4444. Chairman.] Do you think the scientific staff of the Board of Inland Revenue could be so adapted as to meet any of the purposes which you desire to be accomplished by your central Board?—I think it could be adapted to that purpose very well; it would be necessary that it should be re-constituted to a certain extent, that is, the sphere of its operation should be enlarged; it should take cognisance of many matters that it does not now; it now merely takes cognisance of adulterations occurring in exciseable articles; its powers do not even extend to duty-paying articles. There are a number of articles, the duty upon which furnishes a large revenue, the adulteration of which is not attended to at all by the Excise; for instance, the adulteration of spices, of liquorice, and many other articles.

4445. Viscount Ebrington.] The Excise view adulteration in its relation to the revenue, rather than to public health and morality, do not they?—Yes, and not fully as regards revenue; of many articles which furnish revenue, it does not make any examination for the purpose of detecting adulteration.

4446. I would rather say the branch of revenue connected with their own department?—The articles that come under their supervision are, I believe, only the following: spirits, including beer, tea, coffee, cocoa, pepper, tobacco, and snuff.

4447. Mr. Wise.] Is there not one great element in the prevention of adulteration of which the Excise do not avail themselves, namely, publicity?—Yes.

4448. The Excise rarely publish the names of those who are guilty of breaking the law?—Except the case comes before the constituted authorities in the ordinary way in the form of a trial.

4449. Do not you think that publicity, such as is laid down in the Bread Act, that is, publishing the names and residences of offending parties, would have a greater effect in checking adulteration than anything else?—Yes, undoubtedly.

4450. Do not you think if the substance or a précis of the Bread Act, which is

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is now apparently obsolete, were published, it would be a great advantage to the public?—Yes.

4451. Are you aware that in Paris there is a schedule published every year by the prefect of all articles that shall not be used in colouring, in mixtures and in other things?—Yes. I am quite satisfied that the most effectual check to adulteration which can be devised is by a well-regulated system of publicity, making the parties who practise adulteration personally responsible.

4452. Is not that a much better system than imposing heavy fines?—Fines hitherto have been found to fail in accomplishing their object to a great extent; they do not accomplish the object so fully as it was hoped they would have done. There has been a system of fines in operation for a great many years in regard to the Excise, yet you find adulteration still to prevail in exciseable articles; whereas since the system has been followed of publishing the names and addresses of the parties found to sell adulterated articles, adulteration has become less frequent. I consider I am greatly within the mark when I say that there is not one-twentieth part of the adulteration prevailing at the present moment that did prevail four or five years from this time. I attribute that to the frequent and repeated exposures which have taken place of adulteration, and to the fact that adulteration has been brought home to the persons practising it; their names have been more known to the public.

4453. The question of fraud being of so much importance to the public, do not you think it might be desirable for a learned commission, composed of such men as Mr. Graham, Mr. Redwood, and others, to be appointed to look into the effect of alum in bread, and into the adulteration generally of food in the metropolis, and the large towns of this kingdom?—I should have some doubt of the good effect of any commission of that kind that was not constituted in a very careful manner, and did not embrace a considerable number of persons. I think a report emanating from two or three men, even if men of great names, who had but little practical acquaintance with the subject, would do more harm than good; I have seen the mischief of such a proceeding in several instances.

4454. Do not you think, with respect to the use of alum in bread, which has been so much disputed, the report of a learned commission would be useful?—A commission to inquire into that particular subject, provided it were large and embraced the proper men, would be useful, although nearly the whole of the evidence already given seems to go in one direction, which is to show that alum in bread is prejudicial to health.

4455. How do you account for the extraordinary apathy in the metropolis in reference to the Act relating to the adulteration of bread?—Every person is so engaged in his own affairs that he has no time to devote to such things, although they intimately concern him.

4456. Have you ever seen a loaf in London marked with a large M?—Never.

4457. Mr. Moffatt.] I had not the advantage of being present when you gave evidence on the 13th of July 1855, consequently there are a few questions which I am anxious to put to you. First, in reference to the evidence which you gave on that day, in which you spoke of the general and almost universal adulteration of articles of food; what number of samples did you test to enable you to arrive at the conclusions stated in the evidence you gave on that day?—The number of samples varied in different cases, and with the article reported upon. I may state, generally, that they varied from something like 20 to, in several instances, 50, and in one or two instances 100 samples.

4458. Of one article?—Yes.

4459. Making a total, perhaps, of 3,000 or 4,000 samples altogether?—I think the total number was between 2,000 and 3,000.

4460. Can you inform the Committee what proportion of your analyses of those samples you obtained by the microscope, and what proportion by other tests; in the first place, what proportion were obtained by the microscope?—That would require a special calculation; a very considerable proportion was obtained by means of the microscope; many results were obtained by chemical means; and, in many instances, both the microscope and chemical means were employed.

4461. What length of time were you engaged in making the analysis of these 2,000 or 3,000 samples, which enabled you to come to the conclusion that there was general and almost universal adulteration of articles of food?—Between four and five years.

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4462. From the evidence which you have given with respect to many articles, it appears that it would require not only one analysis, but a great variety of analyses, to ascertain the facts stated in reference to the foreign substances contained in very many of the articles indicated in your first evidence; is that so?—The conclusions which I detailed to the Committee in my first evidence were founded upon the examination of a large number of samples of the same article.

4463. Take annatto; you state annatto to be adulterated with chalk, wheat flour, rye flour, salt and soap, for bulk and weight; does not it require, in each of those cases, that you should analyse annatto in bulk, and then all the component parts which you found in the annatto?—It certainly does not require that; for instance, if I wish to ascertain whether wheat flour is present in any substance, the mode which I should pursue to get at that result would be to examine it by the microscope; and if I saw those characteristics which distinguish wheat flour from other kinds of flour, it would be sufficient evidence to me that the sample in question contained wheat flour.

4464. You would, in the first instance, analyse the annatto by the microscope?—Yes.

4465. Would it not be necessary to make a separate analysis, to distinguish between wheat flour and rye flour?—Those flours are best distinguished by means of the microscope; a separate observation only is required by the microscope.

4466. Viscount Ebrington.] That is to say, when you see certain forms of substance, you recognise them as wheat flour, or rye flour, or barley meal, just as in looking round a room you distinguish certain persons by their countenances?—Exactly; your Lordship's illustration meets the case exactly.

4467. Mr. Moffatt.] You stated in your former evidence, that "anchovies are mixed with Dutch, French, and Sicilian fish;" how did you arrive at that conclusion?—Dutch fish are well known in the trade; they are very much larger than the true anchovy; they have never any scales upon them; it is easy to tell Dutch fish when you are once acquainted with them; the Dutch fish is three or four times larger than the ordinary anchovy. If you show a dealer a sample which contains Dutch fish, he will have no difficulty in recognising it as such, and so with Sicilian fish.

4468. Are you sure of that?—It is well known that Sicilian fish are used in the adulteration of the real Gorgona anchovy. In my analyses, in no instance, so far as I remember, did I state that a sample of anchovy contained Sicilian fish, but in several instances I did state that the samples contained Dutch fish. I stated that Sicilian fish were employed in the adulteration of anchovies upon general evidence, and that it is so, dealers in those articles will inform you.

4469. Are the Committee to understand that in the evidence you have given you are stating only what you know of your own knowledge, or that it is partially upon your own knowledge, and partially upon hearsay, and what you have understood from other people?—In 999 cases out of 1,000 I may state that I have only given to the Committee evidence of which I have distinct personal knowledge, and not from hearsay. In some instances it is possible that I may have referred to the evidence and statements of others in illustration of any remarks which I may have had to make.

4470. You state bread to be adulterated with "mashed potatoes, alum, hards, and sometimes, though rarely, with sulphate of copper;" how often have you found sulphate of copper in bread?—I have never found sulphate of copper myself in bread, but there is undoubted evidence of the fact that sulphate of copper is used in bread making; I believe that it is used largely in Germany and France, and that it is prohibited, under special penalties, from being employed.

4471. Were you understood, when you came to give evidence, that you were speaking to what was done in Germany and France, or were you understood to be giving evidence exclusively as to the adulterations which obtained in this country?—I spoke chiefly, indeed almost entirely of adulterations which obtained in this country.

4472. Is it to be understood that the practice of adulterating bread with sulphate of copper does obtain in this country, or only in Germany and France?—I believe that adulteration of bread with sulphate of copper is very little practised in this country indeed.

4473. Have you ever, of your own knowledge, known bread to be adulterated with sulphate of copper?—I have found copper in bread; I could not say whether it was there as sulphate, or whether it was intentionally introduced; so particular



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are they in France with regard to the adulteration of bread, that they will not allow copper scales to be used to weigh it in; and sometimes, if you met with copper in bread in this country, the scales may possibly explain the source of the copper.

4474. Do you think it is strictly accurate that any one should come to this Committee and state that bread is adulterated with sulphate of copper, of his own knowledge, and subsequently state that this has been done in France and Germany; it appears from your evidence that, so far as your knowledge goes, bread is never adulterated with sulphate of copper?—Not exactly that. I have met with copper in bread; whether it was put there intentionally or not I cannot say; I know it to be used abroad, as I have stated, and that it is an adulteration which is really practised.

4475. Are the Committee to understand you, in bringing before them this terrible list of adulterations, to imply that it is really a list of adulterations which occur in foreign countries, as well as in England?—Such would undoubtedly be a very wrong opinion for the Committee to form. I may have mentioned one or two instances of adulteration that do not apply to this country; but in 99 cases out of 100 the adulterations described by me apply to articles sold in this country, and to articles which were analysed in this country.

4476. You have informed the Committee that butter is adulterated with water; do you mean to say that the presence of water in butter is to be regarded as an adulteration?—If water were added intentionally, and mixed up intentionally with the butter to increase its bulk and weight, I should most decidedly consider it to be an adulteration.

4477. Is it in the ordinary process of dairying possible ever to produce butter without water being in it?—A certain quantity of water, or rather scum of the milk is usually present; but if the quantity of water is very large, and amounts to one-third of the article, it would not be likely that that quantity of water found its way into the butter in the ordinary process of churning.

4478. Viscount *Ebrington*.] Do you consider the mixture of water with spirits to be an adulteration?—I do.

4479. If water is intentionally used for the purpose of defrauding the customer, you consider that would apply equally to butter?—Certainly.

4480. Or to wetting coals?—Yes.

4481. Mr. *Moffatt*.] What quantity of water would you say should be the legalised quantity of water to be used in butter?—I am not prepared to say what should be the legalised quantity of water in butter; but if I found that a sample of butter contained one-third of water, I should be disposed to say that that quantity of water never got there by fair means.

4482. What is the maximum quantity of water you have found in butter?—I find it vary exceedingly; sometimes there is not 10 per cent. of water; it depends upon the condition of the butter altogether.

4483. Have you ever found butter with not three per cent. of water?—I cannot remember that I have.

4484. Have you tested butter to ascertain the quantity of water?—Yes.

4485. Would you consider 10 per cent. to be a very large quantity of water in butter?—No, not a very large quantity.

4486. What is the largest quantity you have found in butter?—It is difficult to say; I have found various quantities; I could not always draw the line as to the quantities legitimately there, and those that were not legitimately there. Where the excess of water was great, there could be very little chance of error in the conclusion arrived at.

4487. Do you consider something over 10 per cent. of water in butter an excess?—I have mentioned twice that I consider a third a great excess.

4488. You would not deem a fifth a great excess, would you?—I am not prepared to say without going more fully into the question.

4489. It has been given in evidence before this Committee that butter is imported from Holland in which a great quantity of water was found: what would you propose should be done with that butter?—If that butter contained a third or more than a third of water, I should look upon it very suspiciously indeed.

4490. How would you deal with it?—In the same way that I would with any other case of adulteration; but I should take care that the premises upon which I proceeded were correct.

4491. Assuming

4491. Assuming that a cargo of butter was sent from Holland which contained 30 per cent. of water, you would have inspectors, to ascertain the quantity of water in the butter?—If such a case were referred to me, I should institute some careful experiments of my own, before I proceeded to deal with any particular case.

4492. Assume the butter to be sent from Holland, to arrive here, and found to contain 30 per cent. of water; how would you recommend the Committee should deal with that butter?—I should make no recommendation upon the subject, until I had gone carefully into it to see what I could safely recommend. I believe I could recommend that a third of water should be regarded as adulteration; but I should not make that recommendation officially or formally until I had gone into the question by actual investigation.

4493. Assuming that there was 30 per cent. of water, and assuming that you took it to be adulterated; what do you say is to be done with that butter?—That is a question open to a good deal of consideration.

4494. You have no remedy to recommend?—I do not know that I have made up my mind as to the exact remedy; I believe one remedy would be, that it should be returned to the parties who sent it.

4495. Would you prohibit the importation of butter into this country if it contained 30 per cent. of water?—If I had satisfied myself that it was there with a fraudulent intention I should.

4496. Viscount *Ebrington*.] Have you made up your mind whether it would be desirable to prevent the importation of damaged articles, or whether it would not be sufficient to deal with them when they came to be retailed to the public?—I almost think that it would be necessary to prohibit to some extent the importation of some articles that arrived in this country in an adulterated state. It would be hardly fair to make the mere seller responsible for adulterations practised by parties resident abroad.

4497. It would be very possible, would it not, by extracting the water which was in excess, to turn butter, even containing one-third of water, to a good purpose?—Yes, one might make a drawback in that case upon the article in proportion to the quantity of water it contained; that is another and a better remedy than the one I have suggested.

4498. Mr. *Moffatt*.] In your former evidence you stated that you found cinnamon adulterated with cassia; are you aware how cinnamon is most generally sold?—It is sold in the stick, and also in powder.

4499. Are you aware what proportion is sold in each form; whether a much larger proportion is not sold in stick than powder?—I am not aware of the proportion.

4500. Of course, having declared cinnamon to be adulterated with cassia, you know the appearance of the two spices in the stick?—Yes; I know the difference. I do not know whether any samples could be produced to puzzle me.

4501. It is a thing, in the knowledge of every one acquainted with the subject, that cinnamon in the stick cannot be mistaken for cassia, is it not?—Many persons are wholly unacquainted with the distinctions which exist between the cinnamon and cassia in the stick.

4502. Do you intend your evidence to go to the extent that you believe grocers frequently sell cassia in the stick for cinnamon in the stick?—I have no doubt they do.

4503. Have you ever bought cassia in the stick for cinnamon in the stick?—I have frequently.

4504. You stated in regard to cocoa and chocolate, that they are adulterated with flours of wheat and Indian corn, sago, potato, and tapioca; did you make separate analyses to get each of those articles?—I made separate observations with the microscope; the best means of detecting sago and most other flours or starches is by the microscope.

4505. Viscount *Ebrington*.] When you are once familiar with the aspect of those different articles under the microscope, it does not require repeated observation, but one observation with the microscope, to say that in such a corner there is a bit of tapioca, in another a bit of sago, and in another a bit of wheat flour?—If the observer is well acquainted with the character of the different articles, a mere glance is all that is necessary to enable him to identify them.

4506. Mr. *Moffatt*.] Is that the case with respect to the granulation of the flour of wheat and Indian corn?—Yes.

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4507. You

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4507. You go on to state with regard to cocoa, that it is adulterated with sugar; I presume you are alluding to manufactured cocoa; do you deem it to be an adulteration to put sugar into cocoa?—I deem it to be an adulteration under these circumstances, provided the article I ask for is supplied to me as cocoa; if I ask for cocoa, and the article supplied to me is an acknowledged compound in the same way as chicory and coffee are supplied under legal sanction, as an acknowledged compound, I should not consider that an adulteration; but if I go into a shop and ask to be furnished with cocoa, and I am furnished with a mixture of sugar and various kinds of starch, and which mixture contains very little cocoa, I should consider it to be an adulteration.

4508. Mr. *Sheridan*.] Is the analysis by the microscope a qualitative and quantitative analysis?—It is to some extent a quantitative analysis; you may get an approximate idea as to quantity, and you may often also form an opinion as to quality.

4509. Take the case of coffee and chicory (you not being able to detect chicory except by the microscope), could you regard it as a quantitative analysis?—To a great extent you could; you could form an opinion as to whether there was 10 per cent. or 30 per cent.; although one could not give the exact percentage.

4510. Mr. *Moffatt*.] Assuming that a substance was inserted in this manufactured article called cocoa or chocolate to very much improve the taste and quality of the article, would you consider that an adulteration?—I consider that every article should be that which it professes to be, as it is supplied to the purchaser. If a purchaser enters a shop and asks for a pound of cocoa, he ought to be supplied with a pound of cocoa, and not with a pound of a mixed article, containing various ingredients.

4511. Assuming that at the time you made your experiments sugar was at a higher value than cocoa; that a pound of sugar cost more than a pound of cocoa; in that case would you deem it an adulteration to insert some of the commodity which was of greater value for the purpose of improving the manufactured article which is sold to the public?—I should consider it was a deception if I asked for cocoa, and was supplied with an article which consisted of anything but cocoa; but I must say the facts, as far as I am acquainted with them, are not exactly as you state. I have never been supplied with a pound of cocoa at any time at the same price as that at which I could buy a pound of sugar; I have been always charged nearly double.

4512. I must ask you to apply your attention to the first cost of cocoa?—I would rather not speak to the first cost; I speak to the article which is supplied to the consumer.

4513. The question which has been put to you, assumed that the sugar cost the manufacturer a larger price than the cocoa, by 10 or 15 or 20 per cent.; in that case you are asked, whether the admixture of sugar with cocoa, seeing that it improves the article and makes it more palatable to his customer, you consider that insertion of a higher-priced article a fraud?—I should consider it a deception, if I went to a manufacturer of cocoa, desiring to have nothing but cocoa, and intending to put the sugar into it myself, if he supplied me with an article which had sugar already mixed with it.

4514. Mr. *Wise*.] Do you know the price of the pure cocoa nib?—Not exactly.

4515. One shilling a pound, would it not be in the rough state?—I believe about that price.

4516. Are not all cocoa pastes made from the cocoa nib?—Yes.

4517. So that in reality sugar would always be cheaper than the cocoa nib?—So far as my experience goes, I have found sugar to be much cheaper than cocoa.

4518. Do not you think the best protection to the public is to buy the cocoa nib, and not to buy the paste and powders?—Yes; I should mention that flaked cocoa is very frequently sold without its containing a particle of sugar or starch of any kind. To my taste there is no cocoa so good, so nutritious, or so palatable as flake cocoa. This genuine flake cocoa may be purchased at Ridgeways; I will tell you why I mention their names. They sent me some years ago samples of flake cocoa for examination; they informed me they bought the best beans they could obtain in the market, and they forwarded them to a cocoa grinder, but that they were not satisfied with the article returned to them. I examined the sample, and found it to contain a large quantity of wheat flour. I mentioned the fact

fact to the Messrs Ridgeway, and since then they have had a proper apparatus, some kind of mill erected on their premises, and they now prepare the flake cocoa for themselves; they sell it at a somewhat higher price; but a pound goes a great deal farther than a pound of the ordinary cocoa.

4519. What is mixed with the cocoa bean to make the flake cocoa?—It is only ground and milled in a particular way.

4520. It is the pure cocoa nib crushed?—It is the pure cocoa nib reduced to a fine paste.

4521. To save trouble to the customer?—Yes; you get the active properties of the cocoa more readily given up to water.

4522. *Chairman*.] If I understand your opinion rightly, you do not object to the mixture of different articles of consumption with materials of higher or lower value, provided the mixture is named, and the article is sold as a mixture?—I think that there would be no objection to that being permitted.

4523. What you object to is the article being sold as a pure article, whereas it is mixed with some inferior article, or perhaps in some cases with an article of superior value?—Exactly. The only objection I have to allowing extensively the sale of mixed articles is the question as to quantity; it is possible to make mixtures in all imaginable proportions, and when so made, it is a most difficult matter, in many instances, to decide upon the proportions in which the several ingredients are present in that article; in some cases it is easy, and in some cases it is utterly impossible; that is an objection which strikes me very forcibly. With regard to the present regulation affecting the sale of chicory and coffee, the public are not protected as to the quantity of chicory, and vast quantities of that substance are sold with the labels beyond what would be sold if the proportion of the two ingredients were known which exist in the different packages.

4524. Mr. *Moffatt*.] When you stated in a previous part of your evidence that cocoa was double the price of sugar, you intended that to refer not to the cocoa as imported, but to the manufactured article?—I spoke generally of the manufactured article.

4525. Do you know the price of raw cocoa as imported?—I was once acquainted with the wholesale prices, but I now forget them.

4526. The questions which I have put to you in reference to the comparative prices of sugar and cocoa, of course referred to the cost to the manufacturer?—I have but little acquaintance with the wholesale prices of those articles, and especially the variations in those prices from time to time.

4527. You stated in your former evidence that you had found curry powder coloured with red lead; what per-centage of red lead did you find in curry powder?—I believe I made no quantitative examinations of the amount of red lead present; but I found in many cases such complete evidence of the presence of that substance, that the quantity must have been considerable. I have made rough quantitative examinations, but not exact quantitative examinations.

4528. When you say considerable, what do you suppose is the maximum quantity of red lead that you have found in curry powder?—About one per cent. would be very considerable, and even half a per cent., because red lead is a very injurious substance.

4529. Mr. *Sheridan*.] Is that done by the microscope?—No, by chemical examination.

4530. Mr. *Moffatt*.] How much Cayenne pepper does a person take in the course of a year who is in the habit of using that condiment?—I do not know; in Cayenne pepper the quantity of red lead is much more considerable than in curry powder.

4531. What per-centage of red lead have you found in Cayenne pepper?—Four or five per cent., and even greater quantities than that.

4532. Viscount *Ebrington*.] Very small quantities of red lead would be most pernicious to health, would they not, if taken pretty regularly?—It would be difficult to name the smallest amount of red lead, which, introduced into the system daily, would not be injurious to it.

4533. It is on the cumulative principle?—Yes.

4534. Mr. *Moffatt*.] Have you found flour adulterated with anything but alum?—Occasionally bean flour and rice flour, not frequently; but many other adulterations have been detected in flour by other persons of a much more serious character than I have detected myself.

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4535. When

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4535. When you state both rum and gin to be adulterated with water, I presume you mean to say that they were not sold at the standard strength?—They were sold not only under standard strength, but I found them absolutely very weak as compared with other samples which I purchased at other shops possessing a higher strength.

4536. Are you aware that the flavour, both of rum and gin, if sold at proof strength, is not pleasant to drink?—I think if you purchased in the way I did, samples of rum and gin at different retail establishments, you would not run much chance of getting samples up to proof strength. If you find 30 or 40 per cent. of alcohol in them, you are pretty well off as regards strength.

4537. Mr. *Wise*.] Are not rum and gin what are called fancy articles?—Yes; and they are greatly reduced by the addition of water.

4538. And therefore, perhaps, they are less injurious to public health?—I should think so; but it is not just to one's pocket to have those diluted articles sold at the price of the stronger.

4539. Viscount *Ebrington*.] You have very often found, have you not, less innocent articles introduced into spirits which have been depreciated in strength by water?—I was going on just then to observe, that in several of the weakest samples of gin and water and rum and water that I have procured, I have met with Cayenne pepper, and I think that is a very injurious addition to spirits of any kind. I believe alcohol itself is injurious enough, but when you add a powerful substance like Cayenne pepper, you make a mixture, the action of which few stomachs can long resist.

4540. *Chairman*.] Especially if the Cayenne pepper contained red lead?—Yes.

4541. Mr. *Moffatt*.] Can you inform the Committee in what per-centage you have found the existence of Cayenne pepper in spirits?—It is difficult to estimate the per-centage of Cayenne pepper quantitatively. The process I pursued was this: I evaporated the spirit in a water bath, and after I had got rid of all the spirit and water, I tasted the extract, and if I found it burnt my tongue very severely, I was satisfied that the quantity was considerable.

4542. Even then it would not have lost its power?—No; Cayenne does not lose its power by evaporation. Cayenne is more active in solution; the tincture of capsicum is intensely powerful; it is that preparation of Cayenne which is ordinarily added to spirits.

4543. Viscount *Ebrington*.] Is not Cayenne more powerful in a substance of high temperature than a low one?—Spirit itself is exciting to the stomach; but if that spirit were taken in hot water, the effect of the Cayenne would be more considerable than if it were simply a mixture of cold water and Cayenne.

4544. Mr. *Moffatt*.] You stated in your former evidence also, that you had discovered stout to be adulterated with water; do you recollect upon what ground you made that statement?—I do, very well; in the first place, I procured a certain number of samples of porter and stout from the brewers themselves; next I procured a certain number of samples from the brewers' tap, which are public-houses in connexion with the different large breweries in London; and in the third place, I procured a variety of samples from ordinary publicans. I compared the differences in the strength of those samples, and I found that the strongest porter and stout was obtained from the breweries; the next strongest was obtained from the brewers' public-houses or taps, and the weakest of all was from the ordinary publicans. I found some of these contained so small a quantity of alcohol that one could form no other conclusion than that the porter and stout had been reduced by the addition of water.

4545. In making those comparative analyses, did you take care to see that the stout you obtained from the brewer was the same stout, or drawn from the same tap, as that which you got at second-hand?—In one or two instances that was so; it was not so generally; it was impossible to do this in a general way; you cannot always ascertain what brewer supplies the publican of whom you make the purchases.

4546. Have you a standard strength by which you would determine whether stout had a portion of water in it or not?—There are no accurate standard strengths; when I obtained from brewers' taps porter twice as strong as another porter obtained from an ordinary publican, I felt that I might safely draw the conclusion that it had been reduced in some way. I may mention that the evidence of strength was not the only evidence upon which I went in all cases before coming to

to a conclusion upon that point; in some cases one could detect by the character of the extract left that there had been treacle, sugar, and salt used.

4547. Viscount *Ebrington*.] You draw your inferences partly from the presence of articles which were intended, in your opinion, to compensate, by their flavour, for the absence of strength, in what was sold as stout and beer?—Undoubtedly.

4548. Mr. *Moffatt*.] Do not you think it was quite possible that one brewer should make his stout half the strength that another brewer made his stout?—With regard to porter, I believe that is not the practice. I am not aware whether brewers make stouts of different qualities; brewers do not ordinarily make one kind of porter, which they supply for consumption at their own taps, and another kind to supply to the publicans; and when I found as a rule, that when I procured the porter of a brewer it was twice as strong as the porter I obtained from a publican, I was safe in the conclusion that I drew, that the porter of the publican had been reduced by means of water.

4549. I am seeking for information in regard to stout; you seem to reply in regard to porter; you have stated that you found one stout only half the strength of another stout; therefore, I presume you intend to inform the Committee that there had been an adulteration with water to the extent of 50 per cent.; would it not occur to you as quite possible that one brewer should brew stout of half the strength of the stout of another brewer?—I know that the same price was paid for the stout in all cases.

4550. It does not follow as a necessary consequence that the stout of the lower strength was adulterated with water to the extent of 50 per cent.?—It follows as a necessary consequence, that one did not get the same value as one ought to have done for the money.

4551. Does not it resolve itself into a question of buying and selling, as to who sells the best article?—No; some stouts were so reduced that it was not fair to the brewer to suppose that he had sent out such an article at all.

4552. Mr. *Wise*.] What is the difference between stout and porter?—They are beverages of the same character; the one is stronger than the other; the stronger is the stout, and the weaker is the porter.

4553. According to your statement stout is not the strongest?—It is the strongest.

4554. Viscount *Ebrington*.] In short, you use your own common sense in drawing inferences upon these subjects?—I endeavour to do so.

4555. *Chairman*.] And you believe that the common sense of the public would run pretty much in the same course; if you found an article one-half of the strength as an article of the same name sold at other places, you would conclude that it was adulterated with water?—Exactly so.

4556. Mr. *Moffatt*.] The public having an equally ready means of judging with yourself, does not it follow that they will take care and protect themselves; have not they common sense as well as you?—I have no doubt the public have common sense. At the same time, I may repeat a remark which I have made before this Committee to-day, that men are so occupied in their own immediate personal affairs, that they have but little time to bestow on the question of adulteration, and less knowledge to apply to it, even if they were willing to bestow the time and attention necessary.

4557. Your opinion is, that a labouring man is so occupied that he is not well able to judge whether his beer is 50 per cent. weaker than it ought to be or not?—I believe the labouring man is defrauded to an extent of which the rich man can hardly conceive, in the articles with which he is able to furnish himself out of the proceeds of his daily toil; he is more exposed to imposition from adulteration than any other persons.

4558. Viscount *Ebrington*.] The artful adulterations are constantly misleading him as to the strength and quality of the articles which he purchases, by the addition of articles that give him the impression of strength in spirits and beer, for example, which they do not possess, or the impression that coffee and tea, by colouring the water, have a strength which they do not possess?—That is the case undoubtedly, to a very large extent.

4559. Mr. *Moffatt*.] The question which I put to you was answered generally; I ask you again whether the poor man is not himself the best judge of the strength and quality of his beer?—I should say decidedly that he is not the best judge, for this reason: when the beer is so reduced by water, other things are

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added to bring up the flavour, such as salt and sugar; hence he may have an article furnished to him which satisfies his palate, without its containing that ingredient which gives value to the liquid which he drinks, namely, the alcohol.

4560. In your analyses with regard to porter and stout, I observe you do not include *cocculus indicus*; did not you find any *cocculus indicus* in those samples?—The reason why I did not include *cocculus indicus* is this, it is most difficult to detect it even if present. Some chemists have entertained, until recently, the opinion, that it was almost impossible to detect it. I believe it is possible, but most difficult, and I therefore did not carry my investigations so far as to be able to determine whether *cocculus indicus* was present or not. Upon general evidence which has been given, there is no doubt that one may safely say that *cocculus indicus* is employed in the adulteration of beer extensively.

4561. Have you not found it in your analyses?—I have not detected it by chemical analysis.

4562. Have you analysed a great number of samples of porter and stout?—I have analysed a considerable number at different times.

4563. Mr. *Sheridan*.] Can you say that *cocculus indicus* was not present in those articles?—I can give no opinion as to the presence of *cocculus indicus* from my own examinations.

4564. Mr. *Moffatt*.] In regard to the article of tea, you state that the public are greatly imposed upon by the use of exhausted tea-leaves, and leaves other than those of tea, British and foreign; by what experiments did you arrive at that conclusion?—With regard to exhausted tea-leaves, the evidence of the Excise returns furnishes proof; I have had samples furnished to me by the Excise which have been seized at different times. I have read cases in the newspapers of different seizures, and I have obtained samples of those articles. With regard to foreign leaves, I have met with them in tea myself, and identified them by means of the microscope with different leaves.

4565. Where did those seizures of exhausted tea-leaves take place of which you have given evidence?—I forget the particulars now of the different seizures; several are recorded in my work on adulteration, and others have appeared in the papers.

4566. What foreign leaves have you found in tea other than tea-leaves?—The plum, and several other leaves; some of the leaves I could not give a name to, but I could tell that they were not tea-leaves.

4567. How did you decide that they were not tea-leaves?—If I found a leaf of a different shape in the tea, or of a different structure, I judged that it was not tea.

4568. How do you discriminate the tea-leaf?—The structure of the tea-leaf is represented in my book, and the leaves of many other plants which differ from it, so that you can make no mistake.

4569. Is there any peculiar characteristic in the tea-leaf?—Yes.

4570. What is that peculiar characteristic?—It is all a question of comparison; there is no absolute characteristic in the tea-leaf by which you can identify it; but you can compare it with other leaves, and ascertain that it is not one of those leaves.

4571. Are you aware by any one test or condition what is tea-leaf?—I judge of the tea-leaf by its size, its shape, and the venation upon it (that is, the course which the veins take upon the leaf), which are sufficient often to distinguish the tea-leaf from a great number of leaves. I also judge of it by its structure as seen under the microscope, and if I find that all the characteristics agree, I am tolerably safe in my conclusion that it is a tea-leaf. But if, on examining a parcel of tea, I find a leaf that has none of the character of the tea-leaf, I conclude that it is not a tea-leaf.

4572. You judge partly by the size of the leaf?—Partly; that is one of the characters. The size of the leaf varies with age, but the venation does not vary, nor does the structure vary very materially or essentially with age.

4573. Is there any other mark upon the tea-leaf by which you distinguish it? It may be distinguished by chemical analysis.

4574. How would you distinguish the tea leaf by chemical analysis?—I should separate the active principle (the theine) process.

4575. What is the shape of the tea leaf?—It is shown in my book. (*Handing the book to the Honourable Member.*)

4576. Is

4576. Is the edge of the tea leaf smooth?—No, it is crenated.

4577. You stated in your former evidence that you had found samples of tea adulterated with the leaves of the sycamore, the horse-chesnut, and the plum; within what period did you find that adulteration?—With regard to plum, I found the leaf of the plum in a sample of foreign tea.

4578. Where was that sample obtained?—I forget the circumstance now; it is mentioned in my book.

4579. Was it a sample of tea that you found in use in England?—Yes.

4580. Do you mean that it was foreign tea purchased on the continent, or bought in England?—No, it was a sample of tea purchased in England.

4581. Why do you apply the term "foreign tea" when there is no tea grown in England?—It was not the spurious article which is sometimes manufactured in this country; it was not a British fabrication.

4582. Do you believe that there is any fabrication of tea to an extent to justify you in speaking of it as a manufacture in this country?—Various exposures have taken place of the manufacture of tea in this country from time to time. Within a very short period the Excise received information of no less than seven or eight manufactories of British tea.

4583. What happened then?—The cases were prosecuted, and I hope it has had a good effect in checking the manufacture.

4584. Was it proved that the tea was manufactured?—Yes.

4585. To what extent was it proved?—The cases were fully proved.

4586. Have you any information to give as to the quantities manufactured?—I do not remember the quantities now, but it was upon a large scale; some hundreds of pounds, or hundredweights.

4587. Surely you would not call 100 lbs. a large extent in speaking of an article of which between 60,000,000 lbs. and 70,000,000 lbs. are consumed?—If from time to time exposures were to be made, and the fact made known that manufactories were in existence for fabricating tea, and the persons entering upon the premises, and making the discovery, found there hundreds of pounds of leaves in the process of preparation into spurious tea, I should say that was rather an extensive fabrication of tea.

4588. Where was this?—There are some eight or ten cases mentioned in my book.

4589. Without reference to your book, will you give the information from your own knowledge?—I do not remember the places or dates exactly on the moment.

4590. How long ago was it?—Within the last two or three years.

4591. In what part of the country?—There was a case at Liverpool, I believe, within two or three years, and there have been one or two cases in London. Only the other day, going up Rupert-street, I made an observation which was rather suspicious, with regard to the fabrication of tea from exhausted tea leaves; there was a beggar man going along the street with one or two of his children with him, and another child running behind with a large washing jug in her arms full of tea leaves; it was not likely that those tea leaves were required for the purpose of dusting a house, but it was much more likely that they were intended for some illegitimate purpose.

4592. If they were beggars, was not it likely that they would get those partially exhausted tea leaves to make tea for themselves?—There were enough leaves to make tea for a good number of people.

4593. Is it upon the assumption of seeing that poor man with his child carrying a basin of tea leaves that you conclude an extensive manufacture of exhausted tea leaves is going on in this country?—I should not venture to found such a wide conclusion upon such a fact; but if I met a person collecting exhausted tea leaves, I should be apt to suspect that it might not be meant to apply them legitimately.

4594. *Chairman*.] Especially if you knew that manufactories did exist in which exhausted tea leaves were prepared for sale?—Yes.

4595. *Viscount Ebrington*.] And you infer that for every pound seized, a great number of other pounds had been sold to the public?—Yes. Mr. Phillips described the way in which exhausted tea leaves are procured; he says that children are sent about, calling at the houses and hotels, to get possession of the leaves; and the case of the beggar and his child, to which I have referred, seems to me to be a case of that character.

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4596. Mr. *Moffatt*.] Did your great zeal for public health and public morals induce you to follow up the track of that beggar and his child, and see what became of the tea leaves?—I am afraid I must urge, in excuse for not having done so, that I was too much occupied with my own private affairs to go further at that moment into the question.

4597. You also stated, in your previous evidence, that tea is flavoured with sulphate of iron; when did you make that discovery?—I have had samples of tea sent to me which contained sulphate of iron; and teas have been met with by the Excise containing sulphate of iron.

4598. Could you discover the sulphate of iron?—Yes.

4599. Did it appear to have been recently introduced?—One could not tell when it was put there.

4600. Had you chests of tea sent to you for analysis?—Only samples.

4601. Only half pound samples or so?—Exactly.

4602. With respect to the evidence upon which I have troubled you with a few questions, with the exception of red lead, is there any one of those adulterations which would be prejudicial to health?—Yes; I may refer you to that Table; a variety of articles are mentioned there, and many of them are undoubtedly injurious.

4603. I find a discrepancy between your evidence and that Table; for example, on that Table beer is said to be adulterated with *cocculus indicus*?—In 99 cases out of 100 the substances have been actually detected by myself, but not in every case; where evidence has been furnished of the actual detection of any injurious substance by another party I have included that substance in that Table.

4604. You state generally that you have found articles of consumption adulterated; do you by that phrase mean to imply that you found them adulterated to a large per-centage, or that you merely found in some cases traces of adulteration, and in other cases adulteration of a more extensive character?—I have generally specified whether the adulteration has been on a small or large scale throughout my analyses. When I speak of the presence of any article as an adulteration, of course there is a great deal of difference in the actual quantity; the quantity, to constitute an adulteration, is usually very large or very considerable; but the case is usually otherwise for a pigment or a poison; then the quantity which would be considerable for a pigment or a poison, would not be considerable if you took the quantity as representing a quantity of wheat flour, or any other article of that kind.

4605. Are the Committee to understand you to say that when so and so is adulterated with so and so, it is adulterated generally and very extensively?—Yes, as a general answer.

4606. Viscount *Ebrington*.] You state that a very small quantity of copper or red lead is a large adulteration?—Yes.

4607. Mr. *Moffatt*.] You have stated that flour is adulterated "with mineral white, or hydrated sulphate of lime;" do you mean to say that flour is largely adulterated with mineral white, or hydrated sulphate of lime?—I should think not; I merely record the fact that those substances have been found in flour, without specifying to what extent or how frequently.

4608. Will you now specify to what extent, and how frequently, flour is adulterated with those substances?—As I have already observed, I myself have not frequently detected those articles in flour; but continual exposures are taking place, especially lately in the daily papers, of the detection of those substances in flour; therefore one is perfectly justified in stating that those articles are employed in the adulteration of flour.

4609. But that is a fact of which you do not speak from your own personal knowledge?—Less from my own personal knowledge, but I have sufficient knowledge of the fact to know that they are used.

4610. Do you state that gin is adulterated with sulphuric acid of your own knowledge?—I state that upon the authority of another. I may state that it is not only upon one authority, but there are two or three authorities bearing upon the question of the use of sulphuric acid in gin. The quantity is small, but it is used.

4611. Lard you state to be adulterated with mutton suet, alum and potash; do you state that of your own knowledge?—Those statements are founded upon the observations

observations of Mr. Calvert of Manchester. I have found lard to be adulterated with potato flour.

4612. You stated in your evidence of the 13th of July 1855, that lard is adulterated with mutton suet, alum, and potash; did you make that statement of your own knowledge?—The alum and potash is on my own knowledge; the suet is not on my own knowledge.

4613. What proportion of alum did you find in lard?—One or two per cent.; the object of using alum in lard is the same as using alum in flour; it is to whiten the lard.

4614. Is it not used for the same purpose as salt is used in butter, namely, to preserve the lard?—I believe not.

4615. You go on further to state, that porter and ale are adulterated with grains of paradise; is that of your own knowledge?—No.

4616. You also state that porter and ale are adulterated with capsicum; is that of your own knowledge?—I may mention generally with regard to those things, that where evidence has been obtained of a satisfactory kind of the use of those substances, I have recorded the fact that they are so used. You must understand that the evidence is given there in a very condensed form. If I had coupled every statement with a full explanation of every particular connected with it, I should have extended it to a very considerable length.

4617. The perusal of your evidence is certainly calculated to excite considerable alarm upon the public mind. Are the committee to understand that the adulterations you have stated are not only those which you have discovered by your own personal observation, but also adulterations which have come within your knowledge by a diligent search throughout the records of the United Kingdom for those adulterations?—I think this will be the third time that I have stated that 99 parts of the evidence which I gave to the Committee related to adulterations discovered by myself, but that in some few instances, which instances you appear specially to have selected, I have spoken of certain adulterations upon the evidence of other parties; now that is a general statement with regard to the evidence which I gave before this Committee some time back.

4618. You state porter and ale to be adulterated with wormwood; is that of your own knowledge?—Again, with regard to wormwood, calamas root, caraway and coriander seeds, almond cake, and orris root, those adulterations are mentioned on the authority of others, but there is distinct evidence of the use of those substances; you cannot detect by chemical analysis those substances when they are introduced into beer, or porter, or ale, but you must rely upon the evidence of persons who have seen those things used, and known them to be used. We have evidence of the purchase of those articles by brewers, and they have been found in breweries, and we know by that kind of evidence that they are actually employed for the purpose of adulteration.

4619. The Committee are to understand with regard to the 22 substances with which you allege that porter and ale are adulterated, that the use of those articles is not within your own knowledge, but that you have gathered it from newspaper reports, the information of discarded servants, the discoveries of the Excise, and from other sources?—If the Committee were to form such an opinion, it would be very erroneous. I do not rely upon newspaper reports, or the evidence of discarded servants, with regard to the facts which I have brought under the notice of the Committee. I have mentioned adulterations practised upon certain articles upon good authority; when the authority seemed to me to be good, I mentioned those adulterations. Throughout my book, and throughout the reports in the "Lancet," I have always drawn a distinction between adulterations which I have myself discovered, and those which other parties have discovered.

4620. I am anxious that you should draw the same distinction in your evidence; therefore, I am putting these questions; of course, what you know of your own knowledge has greater weight with the Committee than what you know merely from collateral sources?—I beg to refer the Committee to Tables, which, I believe, are to be found in my former evidence; one of these a list of articles which I have actually discovered myself to be used for the purpose of adulteration; another a list of articles which others have detected, and shown upon distinct evidence to be used for the purpose of adulteration; and the third a list of substances said to be used for adulteration, but of the use of which no sufficient evidence has been adduced.

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adduced. I will read the headings of the Tables: "Classified list of various substances ascertained by myself to be employed for different purposes of adulteration, namely, for bulk and weight, for colour and for smell; for taste, and other properties." Then, "List of articles stated by others to be employed for different purposes of adulteration, but of the use of which no positive evidence has been adduced, although it is extremely probable that many of them have been and are occasionally had recourse to." "List of articles stated to be used, but not likely to be employed for the purpose of adulteration."

4621. You have stated in reference to chicory and coffee, that you have discovered coffee to be adulterated with chicory, although there is a fine upon the vendor of 100 l. in each case for vending such an adulterated article; that is the law as it at present stands, is it not?—That a person shall be subject to a fine of 100 l. who now sells chicory mixed with coffee without its being acknowledged upon the label of the packet.

4622. Notwithstanding that fine, your belief is that a mixture of chicory and coffee is frequently sold without the chicory being so acknowledged?—At the time I gave that evidence, that was done.

4623. Consequently the terror of a fine of 100 l. does not interfere with the buyer and seller agreeing between themselves with respect to what they choose to have?—I dare say the mixture is sold less frequently than it was formerly, without its being acknowledged to be a mixture. I should think that the fine has had some effect in checking the practice.

4624. Viscount *Ebrington*.] According to your experience, are heavy pecuniary penalties always effective in putting an end to an improper practice?—I am satisfied that they have not put an end to the practice of selling a mixture of chicory and coffee as coffee.

4625. You are aware, are you not, that there are very heavy pecuniary fines for bribery at elections, and that notwithstanding those fines, bribery still continues to exist?—Yes, I am quite aware of that.

4626. Mr. *Moffatt*.] In reference to sugar, you have given evidence of the presence of an insect called acari in great quantities; what proportion of those insects have you found in sugar?—I have found many dozens sometimes in a teaspoonful of sugar.

4627. Did you ever see any ordinary Muscovado sugar that did not contain those insects?—All brown moist sugars, as I have stated elsewhere, contain those creatures; but those brown sugars, which have been subjected to a refining process in this country, do not contain them; but I simply refer to the presence of those creatures in sugar as an impurity, and not an adulteration.

4628. In crystalline sugars, when imported, do you find the acari?—I am not sure with regard to crystalline sugars imported. I know that acari are not present in crystalline sugars manufactured in this country. I have scarcely found any sugars as imported which did not contain them.

4629. In your evidence of the 13th of July, you rather bring as a charge against the vendors of sugar that the sugars contain those "disgusting insects"?—I merely cited the fact of their presence to show that the ordinary sugars in sale were not of that degree of purity that was desirable, and that since those sugars contained acari, it was desirable that other descriptions of sugar should be encouraged, namely, crystalline brown sugars.

4630. Or that persons should purchase sugar after it has been refined?—Yes; and that there should be a better system of manufacture adopted both abroad and in the colonies.

4631. Would you propose that the Committee should recommend any legislation in that regard to prevent the use of sugar with acari in it?—I would recommend that a better system of manufacture should be adopted.

4632. *Chairman*.] Are those insects alive in the sugar?—They are both living and dead; all ordinary brown sugars have them, except the sugars which have been subjected to a process of refinement and crystallisation in this country.

4633. Viscount *Ebrington*.] All ordinary brown sugars contain more or less of them?—All ordinary brown sugars contain more or less of those creatures.

4634. Mr. *Kinnaird*.] Is there any cause for the existence of acari in sugar?—I apprehend the cause of their existence is the quantity of albuminous matter contained in the sugar, which is not removed from the sugar because the sugars have not been sufficiently carefully prepared.

4635. Mr.

4635. Mr. *Moffatt*.] In your evidence with regard to the adulteration of tea by the colouring of green tea, is it your opinion that there is any substance, taking the quantity in which it is found in tea, that is likely to be prejudicial to public health?—I think Prussian blue is objectionable; it is well known that green tea does not agree so well with most persons as black tea. I am disposed to believe that the colouring may in some instances have something to do with the ill effects of that description of tea.

4636. Do you attribute the nervous excitement which is occasioned to some persons by their taking green tea to the presence of Prussian blue?—I do not say that it is attributable to the presence of Prussian blue. I only say that the circumstance of those teas being coloured, and not always coloured in the same way, is a suspicious circumstance. I think the fact that that sort of tea does not agree so well with persons as black tea is probably attributable to the method of colouring it.

4637. Do you refer to the admixture of a portion of turmeric?—Not to the turmeric, but to the Prussian blue, and in some cases other things. Unless the Chinese send over to this country tea less highly coloured, the taste for green tea will be utterly destroyed. I believe that the consumption of green tea, in proportion to the increase of the population, has diminished considerably of late years, since it has been known that green teas are never genuine.

4638. That is a sample of tea sent to me from the City this morning (*handing a sample of tea to the Witness*); will you favour the Committee with your opinion upon that tea?—It is very fragrant; it is rather different in the size of the leaf from what is usual. I could not, however, without microscopical and other examination, give any opinion upon it.

4639. Is it your opinion that it is tea or not?—I do not like to give an opinion off-hand; there may be something with it to give it the smell of tea.

4640. I find on the 13th of July you stated that "black lie tea is often coloured and extensively employed by our own dealers and grocers for the adulteration of green tea;" is that stated from your own personal knowledge, or is that something which you stated from hearsay?—I have found in various samples of black caper tea and gunpowder tea a certain quantity of lie tea.

4641. You state that it is extensively employed by our own dealers and grocers for the adulteration of green tea?—It has been purchased in large quantities. At one time it was imported in large quantities; it was permitted to pass the Excise; and I have been furnished with samples by wholesale dealers in tea, persons cognizant with the tea trade, accompanied with the information that so much of it was imported, and so much was for sale.

4642. In what year was that?—About 1851.

4643. What is the practice now, because it appears from your evidence as though that were the practice now?—I am not aware what practice prevails with regard to lie tea at the present time.

4644. You are only speaking of that which occurred five years ago?—I purchased on Wednesday last a sample of gunpowder tea which contained lie tea; who put it there I do not know; I know that it does contain lie tea.

4645. It has been stated in some previous part of the evidence, that lie tea had gone out of use; in what part of the evidence was it stated to this Committee that it would be impossible to get lie tea?—I believe a challenge was thrown out by one person who gave evidence before this Committee, and that it was asserted to be impossible to procure even 2 lbs. of adulterated tea now; I believe it was Mr. Abbis who made the remark.

4646. Mr. *Kinnaird*.] Is the fact of a large amount of adulterated tea being unsaleable owing to the attention of the public being drawn to the subject of adulteration?—I have no doubt that that is the case, if there is any large stock of tea unsaleable now, this arises from the exposures which have taken place.

4647. Mr. *Sheridan*.] In adulterations, are the ingredients so imperfectly mixed that one portion of the article might be more adulterated than another?—That may occur sometimes; but usually, if the substance be a powder, the mixture is intimate; if it be a solid substance, the mixture is less intimate, and you can often detect adulteration by finding little particles of the substances employed. In making a quantitative analysis, it is always well to observe closely the state the several articles are in, taking care that they are well mixed before using a quantity for analysis.

4648. You can make an approximate quantitative analysis by means of the microscope?—

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microscope?—You can; you can take a small portion of the article, being sure that it represents the condition of the whole article, and judge of the quantities approximately.

4649. Mr. Moffatt.] With regard to vinegar, you stated that you had found sulphuric acid present in immense quantities. What are the Committee to understand by the term "immense quantities"?—Sulphuric acid is one of the most powerful articles known; so powerful that when it comes in contact with paper or wood, or other organic matters, they become charred, that is, reduced to charcoal. Therefore, when speaking of an article of that kind, one would be justified in speaking of the quantity added as being considerable, even where the amount actually added did not exceed three or four parts in 1,000. I should consider that to be a very considerable quantity to be present in 1,000 parts of vinegar, and in an article of consumption of that kind, sufficient to be prejudicial to health.

4650. In reference to the grape sugar being found in sugar, you do not consider that an adulteration, I presume?—No, that is there from natural causes, although it was not believed until recently that cane sugar ever contained grape sugar naturally. I should state, however, that instances have been known in which glucere or grape sugar has been made in large quantities, and expressly for the adulteration of cane sugar.

4651. In the evidence you have given to-day you have stated that Liebig recommended the use of lime-water in bread?—Yes, in very small quantities.

4652. Is not that an adulteration?—I think its use is very unnecessary. I merely mentioned that he had made the recommendation that lime-water should be employed in small quantities in bread when it was considered desirable to obtain very white bread, and that the use of that substance was free from the objections which apply to alum. I do not recommend the use of it at all myself.

4653. You have also stated to the Committee to-day that chicory is an aperient; is that your belief?—It is my belief, founded upon some observations and experiments of my own, and it is also my belief, from evidence given me by others; if the practice in France be such as I have stated to-day, it is very conclusive indeed as to the aperient properties of chicory.

4654. Mr. Gregson.] Is it not also diuretic?—The dandelion, which belongs to the same class of plants, is very diuretic; it is put down in works on materia medica, that the recent root of chicory is diuretic; whether the roasted root retains any diuretic properties, I am not able to say.

4655. Mr. Moffatt.] Are the Committee to understand, from the concluding part of your examination in chief, that you are not disposed to apply any remedy for the sale of one article for another; you would call it substitution?—I merely spoke of substitution as being distinct from adulteration; I gave no opinion as to whether it was a matter which called for legislative interference or not.

4656. If a vendor sells cassia instead of cinnamon, you do not think that is a thing which calls for legislative interference?—I think it does call for legislative interference.

4657. Viscount Ebrington.] It is not adulteration?—No.

4658. Mr. Moffatt.] If he mixes his cassia and cinnamon, do you think it is a heavier offence?—No; I think the offence, as far as I can judge of it off-hand, is about as bad in the one case as the other.

4659. Assuming cassia to be the least valuable article of the two, you think the offence of a trader who sells all the inferior article for the superior article, is equal to his selling half of the inferior article and half of the superior article?—The practice is bad in either case.

4660. Viscount Ebrington.] You would apply two different English words to describe those two offences?—Unless you were to exclude cases of entire substitution from adulteration, you could not frame a definition.

4661. Mr. Moffatt.] Any article used to improve cocoa you would still term "adulteration"?—I do not think that what I have said should be taken in that sense; I say that the article should be always what it professes to be. If you go into a shop, and ask for a pound of coffee or chicory, or cocoa, you have a right to expect that you will be supplied with a pound of those articles, and not with mixtures sold under the same names, although it may be stated that the substances added are improvements.

4662. Take the article of wine: how would you define when wine is pure and when

when it is not pure?—I think the definition of adulteration which I have given would meet the case.

4663. What is that definition?—Excluding all cases of substitution, of impurities, and accidental contaminations; I consider adulteration may be defined to consist in the intentional addition to an article, for the purposes of gain or deception, of any substance or substances, and the presence of which is not acknowledged in the name under which the article is sold.

4664. If a Spanish merchant puts a few gallons of water into the wine which he sends, would you deem that wine adulterated?—That is rather a difficult case to decide upon without a standard.

4665. You have no standard fixed in your scheme?—There is no standard with regard to port wine.

4666. Or sherry?—No.

4667. Or wine at all?—No.

4668. Have you made any sketch or tariff of adulterations which you would suggest to the Committee should be adopted as a guide for magistrates?—I have not; I have drawn up some classified lists of articles, amongst others one of articles injurious to health.

4669. You would say if those articles were found in quantities, no matter how minute, in the commodities sold, that the vendor should be subjected to the penalty of having a placard of a particular kind in his window for a certain number of months?—Not because the quantities were minute, or the reverse; if a vendor were found guilty of intentionally mixing injurious substances with any of his goods, and did so for the purpose of defrauding his customers, then I would propose that he should be punished in the manner I suggest.

4670. Suppose he sold the goods as he bought them from the wholesale dealer, and they were found to be adulterated?—Then he should be called upon to give up the name of the party from whom he made his purchase; it would be desirable that the adulteration should be brought home to the actual perpetrator. I think a distinction must be drawn between a person guilty of adulteration and a person selling adulterated articles without any guilty knowledge.

4671. Viscount Ebrington.] On the same principle that the law makes a distinction between innocent and guilty possession of stolen goods?—Exactly.

4672. Mr. Moffatt.] You would not punish the vendor provided he proved that he received the goods in that state from the party of whom he bought them?—Inasmuch as it would in many cases be exceedingly difficult to bring home the offence to the party actually practising the adulteration, it might be necessary to reserve a certain punishment for the vendors of adulterated articles; that is a matter which would have to be well considered.

4673. Viscount Ebrington.] The analogy of uttering base coin would not be very inapplicable in that case?—That is a very good illustration.

4674. Mr. Wise.] In the existing state of society you think that *caveat emptor* should be changed into *caveat venditor*?—Yes.

4675. Mr. Moffatt.] If the analogy of base coin is so strictly applicable, and going on all fours with the adulteration of sugar and wine, and so on, surely the public can protect themselves from the one as well as from the other; I apprehend you do not often take bad shillings?—I am afraid I have been imposed upon more than once in that way.

4676. When you have been once imposed upon by a bad shilling, did not you thenceforth look very sharply after bad shillings?—However sharply I may look after bad shillings, I am afraid I shall not always be able to protect myself, and I shall suffer again from the consequence of receiving bad money.

4677. Viscount Ebrington.] The Legislature has not considered it enough to leave the question of bad shillings to be decided between the receiver and the giver?—Certainly not; very heavy penalties are imposed upon the fabricators of base coins, as well as on those who circulate them.

4678. Mr. Moffatt.] Are the Committee to understand that you would recommend some stringent measures to be adopted with regard to those adulterations affecting public health, but not with regard to those of a fraudulent character?—I think that some stringent measures should be adopted with regard to both classes of adulteration. I should be disposed to be more severe upon those adulterations which not only damage the pocket, but injure our health.

4679. Have you looked at the practicability of adopting any measures without committing great injustice, in many cases, where goods may be sold, the vendor believing

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believing them to be genuine, although they are not purely the substance professed to be sold?—I think measures may be so framed to avoid doing injustice to any party. (*The Witness withdrew.*)

The *Chairman* stated that he had received a letter from Dr. Normandy, with respect to the evidence given by Mr. Robertson. The Committee thought, for the purpose of justifying Dr. Normandy, it was only necessary to read two paragraphs of the letter.

[*The same were read, as follows :*]

"I told him (Mr. Robertson) then that those samples would be no proof of Messrs. Gilbertson & Company's usual practice as bakers, but that I would call in a few days at his shop and choose a loaf there myself, and I did so.

"I never denied or affirmed that I analysed the samples which Mr. Robertson had brought me, for or on account of any unsatisfactory results which the analysis of such samples would have yielded. I kept no memorandum of it, but from the certificate which it appears Mr. Gilbertson holds, it seems that I analysed them, and that this analysis agreeing with that of my own sample, I gave him the certificate in question."

## APPENDIX.

AN ACCOUNT of the Importations of MILLET SEED, in each of the last Ten Years, distinguishing the COUNTRIES from which Imported.

COUNTRIES from which Imported.	Quantities of Millet Seed Imported into the United Kingdom.									
	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.
Russia, Ports within the Black Sea	Cwts. 6,322	Cwts. 891	Cwts. 463	Cwts. 1,288	Cwts. 104	Cwts. 40	Cwts. 174	Cwts. 20	Cwts. 20	Cwts. 180
France	9	28	87	170	200	—	—	—	—	—
Portugal	—	—	—	—	—	—	5,000	—	—	—
Naples and Sicily	—	—	—	—	—	—	—	—	—	—
Malta	—	—	2,242	—	4,101	3,645	—	—	—	—
Turkey Proper	13	6,318	376	1,049	1,167	50,540	1,986	24,450	3,075	22,635
Wallachia and Moldavia	—	—	—	—	—	—	8,143	5,109	—	—
Syria and Palestine	—	—	—	9,107	86,541	51,495	40,708	117,028	12,738	24,191
Egypt	—	—	—	—	—	1	—	6,521	—	—
New Granada	—	1,689	—	—	—	—	—	—	—	—
Other Parts	79	89	158	243	95	119	35	8	28	37
TOTAL	6,423	9,015	3,326	11,687	92,188	106,045	51,046	158,159	16,470	47,093

AN ACCOUNT of the Importations of MILLET SEED in each of the last Ten Years, distinguishing the PORTS into which Imported.

PORTS into which Imported.	Quantities of Millet Seed Imported into the United Kingdom.									
	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.
London	Cwts. 4,622	Cwts. 878	Cwts. 267	Cwts. 1,113	Cwts. 3,464	Cwts. 5,830	Cwts. 178	Cwts. 23,230	Cwts. 55	Cwts. 314
Bristol	—	—	—	—	4,627	3,645	—	9,474	—	—
Gloucester	—	—	2,242	3	—	9,246	8,143	15,589	3,675	—
Liverpool	1	7,539	80	10,559	11,632	20,872	—	10,066	2	4,734
Hull	8	—	—	—	9,262	—	—	45,557	—	2,591
Dublin	—	3	—	8	25,525	9,310	—	—	—	—
Waterford	1,880	—	—	—	10,923	—	—	—	—	720
Limerick	—	—	—	—	44,344	35,522	42,604	54,241	12,738	34,654
Westport	—	—	—	—	2,594	—	—	—	—	—
Sligo	—	—	—	—	—	1,234	—	—	—	—
Belfast	—	483	343	—	—	—	—	—	1	—
Cork	—	—	—	—	—	—	—	—	—	4,080
Other Ports collectively	12	110	394	4	2	201	31	1	—	—
TOTAL	6,423	9,015	3,326	11,687	92,188	106,045	51,046	158,159	16,470	47,093

ANALYSIS

## ANALYSIS OF INDEX.

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