

MODERN SANITARY SCIENCE.

ADDRESS BY PROF. F. S. B. F. DE CHAUMONT, M.D., F.R.S.

Anniversary Meeting, July 14th, 1881.

THERE is so much that might be comprehended within the title I have chosen, that it may seem an adventurous, if not a presumptuous thing, to propose to treat so large a subject in the short time to which an address of this kind must necessarily be limited. It is, however, not my intention to attempt either an exhaustive treatise on first principles or to go into wearisome details of practical sanitation. Neither of these would be suitable for an occasion like this, although it may be necessary to touch upon both subjects of inquiry in the remarks I propose to offer. The title, "Modern Sanitary Science," has been adopted, not without reason, for it is essentially "modern" views that demand our attention, however much we may feel we owe to the past. We know that our forefathers were not entirely blind to the necessity of caring for their own health and that of the community,—and we can trace back into the night of time rules or traditions which were no doubt as much the outcome, in some instances at least, of previous practical experience as of the superstition to which it has been too much the custom to attribute them. But much, if not the greater part of all this was unintelligent, in the sense that it was either the result of a more or less indiscriminating experience, or a blind following of a previously-acquired habit. In many cases, doubtless, there gradually arose around the practices in question myths of a more or less fantastic character, relics of which linger in our practices of the present day. Many savage tribes, and many who cannot by any means be called so in other things, attempt to propitiate the Spirit of Evil in order to avert disease among other woes, just as the Hindûs worshipped the Goddess of Small-pox, until they found in vaccination a more practical though less awe-inspiring protector. It would not be difficult, however, to show that the vaunted civilisation of our own Western Races is but little in advance of those whom we are inclined to despise. When cholera invaded this country, some thirty years ago, some worthy people petitioned the late Lord Palmerston to appoint a day of humiliation and prayer for the purpose of warding off the dreaded disease. This was too much for the keen practical

sense of that great statesman, and he declined to accede to the petition, at the same time recommending them to resort beforehand to the more prosaic, but not less necessary work, of cleaning their own dwellings and cities, on the principle that Heaven helps those who help themselves.

When, therefore, I speak of "Modern Sanitary Science," I desire to look at the question from a point of view that shall have nothing "abergläubisch" about it—I wish that we should be prepared to take up the subject on as strict a scientific footing as existing circumstances will allow, and to treat it in the same way as we treat astronomy and physics. Astronomers do not look to supernatural or extraordinary causes to account for phenomena that are even themselves apparently out of usual reckoning. When a comet appears that has not been seen before, they simply know this, that it is another proof of the immense amount of possible knowledge that is still unascertained; but instead of merely wondering, they proceed straightway to study the phenomenon, to note all that can be observed about it, to calculate its orbit, and its various astronomical elements,—so that before it takes its departure it is possible to say, not *adieu*, but *au revoir*, the astronomer having pretty accurately ascertained when its return may be expected, and leaving behind him a full, true and particular description by which it may be known by future ages. Similarly, the physical philosopher knows perfectly well that any new phenomenon, however apparently remarkable, will be explicable on ascertained laws, or upon others to which these will surely lead up. The supernatural, or rather, extra-natural in those is left to astrologers, spiritualists, and the like, with whom true science does not trouble itself.

So much for the expression, "Modern." It may now be asked—Is the expression "Sanitary Science" justified? Well, this is a point on which a good deal might be said, both for and against,—but I may say, preliminarily, that the expression is pretty generally accepted and has taken its place in our vocabulary. Some of the Universities and Licensing bodies have adopted it, and issue diplomas and certificates in "Sanitary Science,"—but this of course by no means vindicates the claims of Sanitation or Hygiene to the dignity of a Science. If, however, we were to push this principle too far, we should have to modify our nomenclature considerably and refuse the name of Science to many respectable branches of inquiry. It would be extremely difficult, otherwise, to use the expression accurately, for it would be impossible to draw any hard and fast line as to how much of the particular knowledge was or was not so evidently under the rule of fixed law, as to enable us to predict

what would occur under certain circumstances. It may suffice, I think, for practical purposes, to use the expression science, either for a branch of knowledge, which, like Astronomy, is so rigidly and *evidently* under the reign of law, that events of almost any distance in space or time may be confidently and accurately forecast, or for such branches of knowledge as have not yet been ascertained to be so rigidly governed by laws *known to us*, but which we propose and try to inquire into on true scientific principles, and to the exclusion of mere metaphysics or extra-natural speculations. To these last belong Social Science, Political Economy, &c., and to the same class we must for the time relegate Sanitary Science, at least provisionally. But we know and feel that this comparatively inferior position will only be temporary, and that as Biology and other collateral sciences advance, so will Sanitary Science receive promotion, and ultimately vindicate for itself a position in a more honourable and exalted sphere.

At present in Sanitary Matters we are working to a great extent, not perhaps actually in the dark, but by the light of somewhat indifferent illumination,—resembling in some instances that darkness visible which gives weird outlines to objects that would be simple and ordinary enough in the broad light of day,—outlines that impress the visual faculties of different observers so variously, that each is apt to draw his own conclusion and treat with contumely that of his neighbour. But by persistent and careful work the eye becomes accustomed even to the dim light, and may make out with accuracy of detail the nature of the phenomenon observed, but it will only be by careful co-operation and by getting access to it from various directions that that complete and full illumination will be accomplished that shall make it an object recognisable for all time. Thus every one connected with Sanitation may contribute to the fashioning of the whole by bringing his contribution of accurate and careful observation and record, leaving hypotheses and theories to take care of themselves, until the proper time shall come when they may be legitimately formulated. Every step that we can take in the direction of mathematical precision, by reducing to weights and measures all phenomena capable of such resolution, is a step in the true direction of scientific accuracy, and will lead to the advancement of the less certain Sciences to a higher status. Such mathematical application has been found possible even in Political Economy and Social Science, how much more likely is it to be possible in Sanitary Science, which is already founded on the bases of the more exact sciences to so large an extent! We may, therefore, look hopefully to the future and confidently

apply the term Science to Sanitation if we approach the work in the spirit I have indicated, with honest and humble endeavour to question nature, not to dictate to her, to seek honestly for the truth, and not merely for the means of establishing our *dory* and upsetting our neighbour's.

It may now be legitimately asked what Modern Sanitary Science really is, and how far it justifies the demand that we should regard it with favour? We may consider this question with reference to the following points: 1st, What are the objects of Sanitary Science, and on what principles is it based? 2nd, How are those objects to be carried out, and how are the principles to be applied? 3rd, What has been achieved up to the present time? and 4th, What are the prospects for the future?

1. What are the objects of Sanitary Science? These are simple and obvious. It desires to preserve the lives and health of the community. It seeks to diminish the inordinate waste of life which is continually going on. Even now, one-half of the population dying in childhood is throughout its existence absolutely unproductive. The average age at death throughout the United Kingdom is only 39, of which barely one-half has been productive. On the other hand, the average in our great cities has been shown by Dr. Farr to be much lower, as low as 26 in Liverpool, so that there is hardly one-third of this productive. This evil if left to itself tends to increase from the continual removal of the populace from the country into the town and the consequent multiplication of insanitary influences. Sanitary Science further proposes that lives shall not only be preserved but that they shall be preserved under the best possible circumstances, with health and strength to enable them not only to find means of supporting themselves and those dependent upon them, but also of adding to the wealth and productiveness of the community and nation at large. It desires to extinguish diseases recognised already as preventible, and to seek out the causes and favouring conditions of others in the hope that they too may be prevented. What are the principles on which the Science is based? Here we find a question difficult to answer if rigidly scientific grounds are looked for, but we may still formulate certain principles which shall serve well enough for practical purposes. In the first place, we base it upon the knowledge positively obtainable through other branches of science. We appeal to geology, mineralogy, physiography, &c., for information with reference to the ground that we live upon. We are enabled to know its composition, the order of its strata, the character of its surface, and the vegetation that covers it; we appeal to chemistry and physics to tell us the

character and movements of the water and the air in the ground and in the atmosphere; we ascertain what are the normal constituents, and in what way there is occasional deviation from the usual standard; we ascertain from physiology the healthy condition of the human functions and the circumstances under which change takes place; we go to medicine and obtain a knowledge of disease, how it is to be accurately diagnosed, what are the phenomena accompanying it, and whether or not it seems to be capable of being directly communicated from individual to individual. Morbid anatomy, with the aid of the microscope and animal chemistry, tells us the particular organs affected, and the nature and characters of the resulting changes. All these are scientific facts upon which to build superstructure. But here the difficulty begins: we have to obtain most careful and trustworthy observations in order that we may connect disease with certain circumstances which may be observed and investigated; and, above all, we must be able to approach the investigation with minds as little biased as may be. Unfortunately, a mind free from prejudice is a rare thing, and hence the many mistakes in this as in other things. We may say, however, that we have ascertained certain points, or so nearly ascertained them, as to make them practically matters of certainty. Some diseases have been actually traced to active causes, or at least the possibility of communicating them with certainty has been so well demonstrated as to limit the area of search. Others still remain more or less unsolved problems, although we have made some progress in ascertaining the conditions favouring their propagation. We are at all events pretty certain of this, that diseases do not arise indifferently, but are due to certain causes, which we hope will admit hereafter of being traced out and analysed. Recently researches by various inquirers have held out hopes of still further progress being made, so that not only the real active causes of individual maladies may be demonstrated, but even that it may be possible so to treat and, as it were, cultivate those *verae causae*, as to produce a benign agent which shall protect from the severer form, just as vaccine virus does from small-pox. In the meantime, we have ascertained by the evidence of repeated observation that certain conditions of existence are unfavourable to health and favourable to the development of certain diseases; that the living on a wet and contaminated soil, the drinking of polluted water, the breathing of a vitiated atmosphere, the crowding together of human beings, all have their own powerful influence in favouring the spread of disease. To these we may add improper and insufficient nourishment and clothing, besides other points of personal hygiene, such as personal cleanliness, individual excesses, &c.

Now, although it may be said that after all there are no great fixed scientific principles here, such as the law of gravity or of chemical affinity, yet we may claim so far to have come to a general principle of some importance, and that is this: that human ills in a sanitary point of view arise from the presence of matter in the wrong place. Everything has its uses in this world, but anything may be fraught with immeasurable evil if it be put to wrong use. In no case is this clearer than in Sanitation. We have to defend the organic frame that constitutes our body against the various antagonistic organic substances that are external to us. What we require is a continual and proper redistribution of matter, an unremitting attention to the great problem of how matter is to be taken to its proper place in the world, where it shall expend its potential energy in useful productive work, and not in effecting the destruction, rapid or gradual, of the human race. It is only in modern times that the important bearing of this great principle has been distinctly recognised, and chiefly since the circulation of matter was understood, as well as the real origin of the energy of organic bodies.

2. How are those objects to be carried out, and how are those principles to be applied?

Bearing in mind the principle of the redistribution of matter, we may say that this may be best carried out by seeing that the appropriate place be found for all kinds of matter, and that matter (particularly organic matter) be allowed to remain nowhere where it is likely to expend its energy in the propagation of such low forms of life as are believed to be inimical to human economy. Thus, we must carry out such means of removal as shall carry away from our dwellings at once all refuse, both excretory and other,—we must effectually prevent the entrance into our dwellings of any injurious matter from without, either in the form of effluvia from drains or other nuisances, or of emanations from the soil on which the house is situated, we must cause an efficient and continuous change of air in our living and sleeping rooms, so that as little of the excreta of our skin and lungs shall return to us again as we can possibly prevent: we must cease to pollute the soil and the watercourses of the country with organic filth, but use such material for purposes of cultivation, so as to utilise it, instead of as at present poisoning ourselves and our neighbours, or throwing it into the sea: we must obtain pure and wholesome drinking water under such conditions as shall render contamination impossible. We must practice the most rigid cleanliness in person, clothing, and dwelling, and have ample air-space, so as to prevent overcrowding. We must further try and scatter our town popula-

tion more, by attempting to provide better dwellings, and by providing more open spaces so as to form lungs for the towns. The advantages of this last principle are very considerable, and have been dwelt upon by many writers. London is undoubtedly the healthiest of the great cities of the world, and it compares favourably in point of space with most others. Paris is computed to have 40 square metres per head, whereas London has more than double. Dr. Farr has shown that the death-rate in this country corresponds very markedly with the degree of proximity of the population. Liverpool, where the average distance from person to person is only 7 yards, loses annually 1 person out of 26, and the mean duration of life is only 26 years. Manchester, where the people are 17 yards apart, loses only 1 in 31, and has 3 years more of life—9 districts, 28 yards apart, lose 1 in 36, and have an average duration of 32 years, and they proceed thus:—

74 districts, 46 yards apart, lose 1 in 40, and live 35 years.								
137	”	97	”	”	46	”	40	”
345	”	139	”	”	53	”	45	”
53	”	147	”	”	60	”	51	”

These numbers are very significant, showing as they do the very great influence which crowding exercises on the health of the community—even when considered on this somewhat wide and general scale. In particular instances, according to degree, it has been recognised as one of the most disastrous factors in the propagation of typhus, plague, small-pox, and many other fatal diseases.

Another great work of sanitation is the improvement of the food of the people, and it here joins hands with political economy in attempting to increase the quality and the sources of food. To ensure also that the food shall be good and wholesome, in a sound condition itself, and free from dangerous or deteriorating adulteration, is another branch of the subject of the utmost importance.

We must also extend the knowledge of the public on sanitary matters to the widest extent. Much of the success in all these endeavours depends upon them, and without their co-operation little real progress can be hoped for.

3. What has been achieved up to the present time?—It has sometimes been said, that with all our boasted efforts Sanitation has not done much to diminish the death-rate of the community. Is this true? Hardly, I think. The return of the last census have just shown two points,—1st. That the birth-rate is larger

than was expected, and 2nd that the death-rate was smaller than was expected during the last ten years. The former is not a point that tells so directly in favour of Sanitation, dependent as it probably is upon an increase of general prosperity, a higher rate of wages, and the consequent possibility of obtaining the necessaries of life with greater ease. But the second, the lower death-rate, is on a different footing. Had the rate continued between 1871 and 1881 the same as between 1861 and 1871 there would have died in England and Wales alone nearly 300,000 persons who are now living, a convincing proof that, as Lord Carrington told the House of Lords on the 5th instant, "Modern Sanitary legislation had produced useful and important effects." This is a diminution of 5 per cent. on the death-rate, or an addition of more than a year to the mean age of the community. Considering the difficulties that have attended every step in advance and the imperfections that still exist so largely in our public measures, I think this must be accepted as a highly gratifying result, holding out great encouragement for the future. Although we are not in possession of much accurate information as to the statistics of periods before the present century, we may gather from the data that are obtainable, that very great advance has been made generally. The population of Great Britain has doubled in about 60 years in this century, and there is every probability of its doing so in about 50 years, or perhaps even less in the next period,—so that before the year 1940 Great Britain will probably have 60,000,000 of inhabitants, provided nothing interferes to arrest its present rate of increase. Some people will say that this will be a doubtful blessing,—and it will be so if the means of production do not increase in an equal ratio. Without discussing this point and merely using the facts as a measure of the prosperity and health of the people, we find that in the last century it took nearly a hundred years to double the population. It is not easy to calculate out the details of a case when so much is wanting, but if the birth-rate had been the same as at present this would argue a death-rate of at least 28 per 1000, and a mean age at death of only 33 years. Previous to 1700 the doubling of the population must have been a very slow affair, and for a long time, what with wars at home and abroad, general or partial famines, and repeated visits of plague and other pestilences, there was in all probability a diminution of the population at many times rather than an increase. Perhaps nothing marks off modern from older times more than our immunity from general pestilences, due in a large manner to the gradual adoption of the rules of hygiene, particularly increased cleanliness in person and dwellings and improvement

in character and quality of food. Those points come out in a very striking manner when we consider the ravages made by pestilence in former times, and how gradually those have diminished down to our own day. Plague invaded this country twelve times during the 17th century, and at its last visit it slew 68,596 persons in one year, in London and the suburbs alone. Considering that the population at that time could not have been more than a tenth of what it is now, this was equal in proportion to the entire mortality of the whole of England and Wales *from all causes* at the present time. The cleansing fire of 1666 swept out of London the dens of filth which had, from time immemorial almost, invited pestilence into the very heart of the country, and from that time the disease dwindled down, until in 1704 the very name disappeared from the bills of mortality. It is true that in the present day we have from time to time visitations of cholera, but its ravages have been as nothing compared with those pestilences of former days, but we still have other maladies, such as enteric fever and the like, which remain more or less an opprobrium upon our Sanitary progress. If, however, we turn to groups of the community more directly under control, we may perhaps better appreciate what has been accomplished. Our Army and our Prisons are two good examples. The former has been especially valuable as furnishing instances, first of the evil effects of insanitary conditions, and 2ndly, of the excellent results of careful Sanitation. Up to the time of the Crimean War our troops, few in number and expensive to keep up, were allowed to die at a rate that would have been a disgrace to the worst managed institution. Yet those men were apparently better off than their brethren of the same rank in civil life, better fed, better clothed, and better housed, and certainly not more hardily worked. But what were the facts? At every age the deaths were double those of the similar male population of England and Wales, and much more than double, nearly three times, those of healthy districts:—and they were some 50 to 60 per cent. greater than in the most unhealthy Cities in the Kingdom. Her Majesty's Foot-Guards, supposed to be *elite* of the service, were the most unhealthy of all. The story of this has been often told, so I need not weary you with it again, but I would simply point out that when the causes of such insanitary conditions were ascertained steps were at once taken to remedy them, and that the result was even beyond expectation. And it says well for the soundness of Sanitary views that even a quarter of a century ago the Royal Commissioners were able to put their hands upon the causes of disease and death, and to say, "Remove these and you will have the soldier as healthy as the civilian." What has been

the result? If we take the table for 1878 (the last yet published) we find that instead of dying at thrice the rate of the male population of England and Wales, the chances of the soldier's life are now-a-days better than the civilians, during the most of the years that he serves with the colours.

RATIO OF DEATHS PER 1000 LIVING AT THE FOLLOWING AGES:

	Under 20.	20 and under 25.	25 and under 30.	30 and under 35.	
Army at Home, 1878.....	2.92	4.27	5.28	9.05	
Previous 10 years 1868-77	3.09	5.42	7.89	12.52	Total Army mortality (1878) in United Kingdom:
Civil Male Population: England and Wales	6.89	8.67	9.55	10.57	7.53 per 1000.
Healthy Districts	5.83	7.30	7.93	8.36	Before Crimean War: 18.0 per 1000.

This is a very remarkable and encouraging result. The same may be observed in our Campaigns since the Crimean period, although they have been on the whole insignificant. They have, however, generally been signalized by a much smaller degree of sickness and mortality than in any previous experience. The immense importance of this, in operations of war, may be recognised when we consider the proportion that the losses from sickness bear to those from the shot and shell of the enemy. Were the latter the only danger in war, it would be almost comparatively insignificant. In the Crimean war we lost 22,000 men, of whom only 4000 died in battle or of wounds; the French lost about 20,000 in battle, and about 80,000 from disease; the Russians are believed to have lost about 80,000 in battle, and about half-a-million from disease. The American war showed the same; the Northern army lost 97,000 from battle, and 184,000 from disease; the Southern lost half-a-million, by far the greatest number from disease.

Our prisons tell a similar story; from being mere pest-houses in former times, they are now among the healthiest places in the Kingdom.

I might multiply instances if time permitted, and if it were necessary to prove the case that I have advanced, but I think I

have said enough to show that progress has been made in a way that is satisfactory and encouraging.

4. What are our prospects for the future?

I think we may say that they are on the whole encouraging. The great hold that sanitary matters have got upon the public attention is evinced in many ways, by the number of writings and discussions on the question, by the great impetus given to the production of sanitary apparatus and requirements, as shown by the success of Sanitary Exhibitions in various places, notably those in connection with this Institute, and the great Exhibition about to open this week.* We may cite the numerous societies for Sanitary purposes lately founded, and the steps taken for giving instruction, and issuing certificates in Sanitary Science. The legislation on the subject has also been encouraging, although falling far short of what is still desirable, and the valuable inquiries, carried out by the Medical Department of the Local Government Board, have done much to advance the cause. There is one point on which we ought to insist, and that is more extended means of instruction for all classes, and the exaction of certificates of competency from all who are officially charged with Sanitary duties, Medical Officers of Health, Borough and District Surveyors, and Inspectors of Nuisances. At present such certificates are entirely voluntary, and are taken by few. The Sanitary Institute is endeavouring to push this matter by examining Surveyors and Inspectors of Nuisances, and has already done good work. But means of instruction are still much wanted. We desire also that Sanitary knowledge should be distributed as widely as possible, as legislation is of but little use if it goes too far ahead of the knowledge and intelligence of the people.

* International Medical and Sanitary Exhibition, opened at South Kensington, 16th July, 1881.

Sanitary Institute of Great Britain.

ANNUAL REPORT

FOR 1881-82.

THE Council of the Sanitary Institute of Great Britain, in presenting their Fifth Annual Report to the Fellows and Members, desire to point out that much progress has been made in Sanitary Science during the past year, and that ever increasing interest has been evinced in the cause for which the Institute was established.

On July 14th, 1881, the Fifth Anniversary Meeting of the Institute was held in the Lecture Theatre of the Royal Institution, the use of which was kindly granted by the Board of Managers. The chair was taken by the Right Honorable Earl Fortescue, Vice-President of the Institute, and the medals and certificates awarded at the Exhibition at Exeter, were presented by him to the successful exhibitors. A paper was read by Prof. F. S. B. F. de Chaumont, M.D., F.R.S., Chairman of the Council, entitled, "Modern Sanitary Science." The paper will be published in Vol. III. of the Transactions of the Institute.

The Ordinary Meetings of the Institute, which were commenced in February, 1881, were continued during the past year. On June the 21st a paper was read by Prof. W. H. Corfield, M.A., M.D., on "The present state of the Sewage Question." This Meeting terminated the first Session.

The Session 1881-82 was commenced on December 7th with an Inaugural Address, by Dr. Alfred Carpenter, Vice-Chairman of the Council. At this Meeting the Adjudicators reported the award of the Wyatt Edgell Prize. The papers and the discussions which followed will be published in Abstract in Vol. III. of the Transactions. Dr. Carpenter's Inaugural Address will also be published as a separate pamphlet. On February 15th a paper was read by Mr. Henry C. Burdett, F.S.S., on "The Administration and Hygiene of British Hospitals." On March the 8th the Wyatt Edgell Prize was presented, and a paper was read by Mr. G. Gaskoin, M.R.C.S., on the subject of the Prize Essay, "The Range of Hereditary Tendencies in Health and Disease." On April 19th a paper was read by Mr. Henry C. Stephens, F.S.S., entitled, "An Obstruction by the Law to Sewage Disposal," on which subject the Council are considering the desirability of taking further action, and of endeavouring to obtain amendments of the 15th and 21st clauses of the Public Health Act.

The Examinations for Local Surveyors and Inspectors of Nuisances established by the Institute, were held during the year in June and November. At the Examination in June six candidates presented themselves, three as Local Surveyors and three as Inspectors of Nuisances. Two candidates were certificated as competent to discharge the duties of Local Surveyors, and three as competent to discharge the duties of Inspectors of Nuisances.

At the Examination in November eight candidates presented themselves; four as Local Surveyors and four as Inspectors of Nuisances. No certificate of competency as Local Surveyor was awarded, but three candidates were certificated as competent to discharge the duties of Inspectors of Nuisances.

It is with much regret that the Council have to report the death of Sir Antonio Brady, who was among the first promoters of the Institute, and who for many years aided the Council by his advice and influence, and since 1877 kindly acted as one of the Trustees of the Institute. At a meeting of Council, on December 22nd, 1881, a vote of condolence and sympathy was unanimously passed, and communicated to his widow and family.

The Council have also to deplore the death of Thomas Aveling, Fellow; G. Cole, C.E., and Dr. Henry J. Yeld, Members; and Prof. A. Chevalier and Prof. Paulo Gorini, Hon. Foreign Associates.

Since last Annual Meeting there have been elected 13 Fellows, 20 Members, and 9 Associates. The numbers now on the Roll of the Institute are 88 Fellows, 190 Members, 15 Associates, 23 Subscribers, and 31 Hon. Foreign Associates. Total, 347.

The retiring Members of Council this year are W. Crookes, F.R.S.; T. J. Dyke, F.R.C.S.; W. Horton Ellis, F.M.S.; Magnus Ohren, ASSOC. M. INST. C.E., F.C.S.; and the Hon. F. A. Rollo Russell. The names of the following gentlemen are submitted for election at the Annual Meeting to fill the vacancies thus created:—Thomas Wrigley Grimshaw, M.D., Registrar-General for Ireland; James Lemon, M. INST. C.E., F.R.I.B.A.; F. Maxwell Lyte, F.C.S., F.I.C.; William Ogle, M.A., M.D.; J. Wallace Peggs, ASSOC. M. INST. C.E.; Right Rev. Frederick Temple, D.D., LORD BISHOP OF EXETER.

The adjudicators of the Wyatt Edgell Prize of £200—Dr. W. Farr and Dr. B. W. Richardson—for an essay on "The Range of Hereditary Tendencies in Health and Disease," announced at the Ordinary Meeting on December 7th, that twelve essays had been sent in for competition, and that the Prize was awarded by them to the essay bearing the motto, "The Subtlety of Nature far exceeds the Subtlety of Reason," which essay proved to have been written by Mr. G. Gaskoin, M.R.C.S., of Westbourne Park. The Prize was presented by the Rev. E. Wyatt Edgell at the Meeting on March 8th, and after the presentation a paper on the subject was read by the author. The Council are gratified to learn that the essay is about to be published by the author, and hope that this valuable contribution to the literature of so interesting a subject will soon be in the hands of the public.

The Committee appointed by the Council to carry out further ex-

periments on Cows and other Automatic Means of Ventilation, consisting of

CAPTAIN DOUGLAS GALTON, R.E., C.B., F.R.S.,
ROGERS FIELD, B.A., M.INST.C.E.,
WILLIAM BASSIE, C.E., F.L.S., F.G.S.,

have been continuing the work of testing the anemometers and air-meters required for the Cowl Experiments.

As mentioned in the Report of last year, it was found that the corrections supplied with the instruments were not to be relied upon, and that an entirely new set of corrections must be determined for every instrument. Experiments have been continued at the Gas Works, Battle Bridge, and elsewhere, during many months, with a view to determine these corrections, and in the course of these experiments many unexpected and important facts in relation to the working of the air-meters have been discovered. The results arrived at prove that until the experiments on the air-meters are completed no accurate conclusions can be hoped for with reference to the comparison of Cows.

The experiments on the anemometers and air-meters were not contemplated in the original programme of the Committee, and the unforeseen expenses which have been thereby entailed make it necessary for the Committee to ask for further subscriptions, to enable them to complete their investigation satisfactorily. Contributions may be forwarded to Mr. Rogers Field, 5, Cannon Row, Westminster, who has consented to act as Treasurer of the Special Cowl Experiment Fund, which, with the approval of the Council, has been raised to meet the incidental expenses.

In January last, the Council received a request from the Royal Commission appointed to enquire into the Small-pox and Fever Hospital Accommodation, that the Institute should give information or evidence upon the subject. A number of recommendations were drawn up at a Special Meeting of Council convened for the purpose, and Prof. F. de Chaumont, the Chairman, was asked to present them to the Commission. These recommendations included suggestions as to the size and arrangement of wards, the general construction, size and isolation of Small-pox and Fever Hospitals, arrangements for ambulance conveyance of patients, and the establishment of convalescent buildings. The Chairman attended before the Royal Commission, as requested, on the 27th January, presented the recommendations, and in the course of a somewhat lengthy examination explained the views of the Council on this important question.

The Council have prepared some recommendations on the Notification of Infectious Diseases to lay before the Committee of the House of Commons, now sitting to consider the Police and Sanitary Regulations Bills.

In July, 1881, a large Sanitary Exhibition was held at South Kensington, in connection with the Parkes Museum, and the Council considered that it would be of great interest and utility to place on record some account of the Sanitary Apparatus and Appliances there

exhibited. A *resumé* of the several exhibits has therefore been prepared, and will be incorporated in Vol. III. of the Transactions.

The Council are very pleased to acknowledge the contribution of a number of volumes to the Library during the past year, but would remind the Fellows and Members that the Library is as yet in a very imperfect state, and that any books relating to Sanitation will be gladly received. As it is desired to make it complete as a Library of reference, the older works on Sanitary matters will be acceptable as well as those of more recent date.

The next Congress and Exhibition will be held at Newcastle-upon-Tyne, September 26th, 1882.

This town offers every opportunity for a good Congress, and the Council trust that the Fellows and Members will endeavour to make the meeting even more successful than any of the preceding ones have been.

Finally, the Council would report that they have under consideration the establishment of Branches in various parts of the United Kingdom.

By order,

E. WHITE WALLIS,

Secretary.

9, Conduit Street, W.

May 17th, 1882.

SANITARY INSTITUTE
Abstract of Cash Receipts and payments

	£	s.	d.	£	s.	d.
To Balance at Bankers as per Pass Book of the Institute, December 31st, 1880, viz. :—						
Wyatt Edgell Fund	200	0	0			
Deferred Exhibits	80	17	7			
On General Account	215	5	0			
				496	2	7
„ Cash in Hand :—						
Cheques paid to Bankers after 31st December	46	4	0			
Petty Cash	6	7	9			
				52	11	9
„ Donations				5	5	0
„ Fellowship Fees	147	0	0			
„ Admission Fees	33	12	0			
„ Life Compositions	63	0	0			
				243	12	0
„ Examination Fees				40	19	0
„ Annual Subscriptions	215	15	6			
„ Sale of Publications	10	14	11			
				226	10	5
„ Donations to Library				1	11	6
„ Cash advanced by Chairman of the Finance Committee				20	0	0
„ Loan from Exhibition Account				350	0	0
				£1,436	12	3

EXHIBITION

To Balance 1st January, 1881	282	5	11
„ Receipts	121	6	3
	£403	12	2

Audited and found correct with the Books of the Institute,
MAGNUS OHREN, }
ERNEST TURNER, } *Auditors.*
May 4th, 1882.

OF GREAT BRITAIN.
for the Year ending 31st December, 1881.

	£	s.	d.	£	s.	d.
By Expenditure :—						
Office Furniture	4	12	0			
Rent and Taxes	47	0	2			
Salaries and Wages	119	18	4			
Postage, Telegrams, and Carriage.	33	10	10			
Incidental Expenses	46	19	11			
Stationery and Printing	457	19	5			
Advertising	17	6	4			
Ordinary Meetings	87	10	0			
Examination Expenses	27	10	4			
Law Charges	2	12	0			
Library	3	10	8			
Medals and Certificates	8	15	0			
				857	5	0
„ Major McCoy, Balance due on Suspense Account				16	1	1
„ Deferred Exhibits				80	17	7
„ Repayment of Loan to Chairman of Finance Committee				232	19	6
„ Balance at Bank December 31st, 1881—						
Wyatt Edgell Fund	200	0	0			
General Account	49	9	1			
				249	9	1
				£1,436	12	3

ACCOUNT.

By Expenditure	1	8	6
„ Loan to General Account	350	0	0
„ Balance at Bank December 31st, 1881	52	3	8
	£403	12	2