

other troops, they (the English) suffered from scurvy and dysentery much more seriously than the others, due, it was believed, to their neglect of vegetable food and to their drinking brandy or other spirits, whilst their allies drank red acid wine. Many of the earlier campaigns in France were marked by the same thing; and this was, probably, one of the causes of the sickness of Henry the Fifth's army in the campaign of Agincourt. Again, the sailors of the French and American fleets have never suffered from scurvy to the same extent as ours; and it was not till sixty years after the introduction of lime-juice into our fleet that it was thought necessary to make similar regulations in the fleets of other countries. The Americans used to taunt our men with this, and call them "lime-juicers."

Now the reason of all this has been that the diet has been much more varied and more thoroughly antiscorbutic in foreign vessels, particularly in their merchant ships. The actual amount of nutriment has been as large in our ships, but it has been less varied and less judiciously arranged. Our Board of Trade has nothing to do with the food scales of ships, but Mr. Gray hints that the legislature will have to interfere unless ship-owners look to it themselves. The ease with which preserved foods of all kinds can be obtained and carried now removes the last shadow of an excuse for backwardness in this matter, and in particular the provision of a large supply of potatoes, both fresh and dried, ought to be an unceasing care; this is done on board American ships, and to this is doubtless owing in a great part the healthiness of their crews. Scurvy in the present day is a disgrace to ship-owners and masters, and if public opinion is insufficient to protect the seaman the legislature will undoubtedly step in and do so.

And now, ladies and gentlemen, let me close this, I fear, rather prosy lecture, by pointing out that the study of this common-place matter of eating and drinking opens out to us the conception of the grand unity of nature; since we see that the body of man differs in no way essentially from other natural combinations, but is subject to the same universal physical laws, in which there is no blindness, no variableness, no mere chance, and disobedience of which is followed as surely by retribution as even the keenest eschatologist might desire.

## THE NEXT TO GODLINESS.

### AN ADDRESS TO THE WORKING CLASSES

By BENJAMIN WARD RICHARDSON, M.D., F.R.S.

J. COWEN, M.P., IN THE CHAIR.

WHEN the man of genius who represents the city of Newcastle ceased to speak, I was reminded of the remark which was applied by Ben Jonson to Lord Bacon, namely that when Lord Bacon spoke there was only one anxiety amongst the people who were present, and that was that he would too soon stop. Now Mr. Cowen has ceased, and it is my duty to take up the discourse. I have been invited to give a lecture to Newcastle working men, and I am going to do so, in that sense, strictly. It is not uncommon for public men in speaking to working men and women of the country to begin by saying insinuatingly and sweetly that they, the speakers, are also working men. The working listeners listen, and sometimes out of their politeness and good humour applaud the remark, while at the same time they know perfectly well what it means. I shall not follow that course, but shall define what I mean as the working classes to be the men and women who, in the fields, the workshops, and the factories, labour with their hands and receive wages for their labour, an audience, if one could reach the whole of it, the greatest, numerically, attainable.

The national family of England and Wales, reckoned when it was about 25 millions, stood nearly as follows:—Eight millions were children, six were women and others of the household, domestic people, making 14 together. One million was a commercial class, buyers and sellers, making 15. One million was a ne'er-do-weel class, persons in the workhouse, the prison, or asylum, 16. One million was an independent or professional class, politicians, clergymen, doctors, lawyers, soldiers, sailors, artists, or some other salaried, fee'd, or wealthy individuals who belonged to what is called the ruling body of the nation, 17. Two millions were workers on the land, 19; and six millions were workers in the shops, factories, and other centres of work,

the industrials of the people, making up the 25 millions. The two last-named classes are, then, what I understand as the working classes; they, with their wives and children, made up more than half of the nation, and their men stand in such large proportion in number to the men of all the other classes, that they are, in very truth, the masses. It is to some of them I speak.

#### A MESSAGE FROM MR. CHADWICK.

A great living sanitarian has written to-day, asking me to lay before this audience certain important general truths respecting sanitation, an outline of which I will read. The distinguished man who sends you this message through me is he to whom your Chairman has referred, and from whom he has quoted, Mr. Edwin Chadwick, our veteran of veteran sanitary reformers. In brief, these are the facts he wishes me to tell you.

"Tell them," he says, "all you can, from what you see and know about their excess of sickness, pain, premature decay, working failure, and early mortality from causes they know nothing of, because they have been told nothing honestly and clearly respecting them.

"Tell them how their vigorous exertions, even silently expressed, would assist those who are labouring to rescue mankind from these penalties.

"Tell them that the most racking of diseases, rheumatism itself, ascribed so commonly to some obscure cause and accepted as inevitable, is, as ague once was, most often due to bad sanitary laws which permit of imperfect subsoil drainage and damp habitations.

"Tell them that even toothache may be due to bad local or general legislation.

"Tell them that they are scourged with typhus and other plagues from the same errors, by the failure to get the pure air in which these plagues will not live.

"Tell them that of children of the poorer classes, born in lawful wedlock, one-half die before they have reached their sixth year from the operations of bad sanitary regulations.

"Tell them that 50,000 innocents in these islands thus go annually to their graves, as if under the hand of an ever living Herod.

"Tell them that schools, which ought to be centres of health are centres of disease, owing to administrative faults and regulations, elaborated for the inspectors of schools. Tell them that when they hear of that disease called *consumption*, from which

so many thousands die each year, and which they think comes 'like the arrow which flieth in the dark,' they ought to know that it comes constantly from bad administration, which permits dwelling-houses to be built on damp, and sodden, and rotten sites, and which permits industrial workers to breathe, but not to live, in foul airs, gases, vapours, and dusts.

"Tell them that a prediction, based on scientific data, and made half a century ago, has been fulfilled, namely, that in model dwellings a death rate of 15 in the 1,000 has replaced one of 30 in the 1,000.

"Ask them whether they do not think that labours which lead to such saving of life do not deserve as ample recognition as those labours, however skilful, which lead to the destruction of life.

"Implore them to let the subject of the freeing of life from its useless and hard penalties of disease, pain, and death, have some place in their future political programme."

#### THE PRESENT TEXT. THE NEXT TO GODLINESS.

These are words which Mr. Chadwick sends, and I could easily have based a lecture on any one of the passages I have read. His suggestive texts came, however, too late, for before they came to hand I had selected my own text, and that text is—"The Next to Godliness." I need not tell you that this means cleanliness, for the statement, "Cleanliness is next to godliness," is a common proverb. Some hold the statement as of Biblical origin, but it is not so. Others attribute it to the famous John Wesley, who, perhaps, put it into the terse form in which it runs; but it is ages older than Wesley, for it came down to us in the Tractate Sota of the Mishna, an old Jewish book, where it reads, "Outward cleanliness is inward purity."

These are grand words, words worthy of any occasion when men and women assemble to discuss or to study life, and health and life through health. If by some magic spell England could wake up to-morrow, clean,—as I shall define that term,—she would wake pure also in spirit and godly in the comprehension of goodness. Cleanliness covers the whole field of sanitary labour. It is the beginning and the end. Practised in its entirety, it would banish all disease from the world. Where shall it begin?

Like charity, cleanliness must begin at home. An observant physician entering a house in which there is disease, looks around and questions from the house the character of the residents of it in regard to health. If he finds that order

prevails everywhere there, and that cleanliness prevails everywhere there, he is satisfied that his efforts will be well seconded, and that they will have a good chance of being attended with success. But if he finds disorder there, and with disorder uncleanness, then he feels anxious doubly anxious, about what will happen to the person who is under his care, because almost of a certainty many valuable chances of success will be lost.

#### PERSONAL CLEANLINESS.

Cleanliness I say then should begin at home, and it should begin there with the persons themselves who make up the home. The body of man, in order that it may be kept in perfect purity and health, must be daily cleansed by ablution. All the vital functions of the body are benefited by this one yet simple act. The skin, the lungs, the blood, the circulation, the liver, the kidneys, the brain, and even the senses are all in functional sympathy, and if the one be out of working order the others will be. If the skin is severely irritated or injured and is in severe pain over its surface, all parts of the body will suffer more or less; and if the skin be not free to perspire, if it be covered with dust and cast-off parts of itself, again other organs suffer. The skin relieves the lungs of much work. It casts off watery vapour, and it casts off some gases which are of the same nature as the gases exhaled by the lungs. To reduce therefore the functional activity of the skin, is to throw more work on the lungs. To throw more work on the lungs is to interfere with the proper airing, or to speak technically, aeration of the blood. To interfere with this vital change in the blood is to reduce activity everywhere; is to make sluggish the action of the stomach, the liver, and other secreting organs; and is, in turn, to make dull the brain and lessen the mental activity. See then how immensely important a thing it is for health, to keep the skin, at every point and pore, ready for work.

In urging this practise of cleansing the surface of the body, expensive and luxurious appliances are not required. A gallon of pure water, a wash-hand basin, a shallow tub to stand in, a lump of soap, and a large clean towel are all that can be wanted for daily ablution. There are few so poor who cannot afford these few things, and the experiment always pays in the increased health, happiness, and vigour which it brings. This habit of daily ablution should be taught to the young from their earliest life. It then becomes a habit—a second nature—and the day does not seem to have been duly commenced until it has been carried out. Of the benefits which follow this

daily ablution too much could not be said. In schools where the practice is faithfully adopted, the results are an all-sufficient answer for its utility. Connected with this matter of personal cleanliness, the teeth must not be forgotten. A good set of natural teeth is invaluable; invaluable for appearances sake, for speech, for ease from suffering, and most of all for good digestion. But one of the great causes of disease and decay of the teeth is uncleanness. The teeth should be brushed every night and morning—not with a brush hard as a scrubbing brush, for they are refined and precious structures—but with a soft brush, which cleanses thoroughly and leaves no scratch or friction.

#### CLEANLINESS OF DRESS.

Health will not be clothed in dirty raiment, and dress, which is the first possession a man or woman holds, and which is the first thing they are put into, should be cleanly as the body which wears it. No doubt to men and women who have to work in much uncleanness, this is not easy; but in fact the differences that are seen in different individuals engaged at the same occupation, and how clean one often is compared with others, show that the difference between cleanliness and uncleanness is, after all, very much a question of habit, and that when the cleanly habit prevails it is even more easy, as it is more healthy, than the uncleanly. Clothing should be purified, not only by washing and brushing, but by ventilation also. When removed from the body at night it should be turned inside out and suspended in the air. We cannot flatter our French brethren very heartily by imitating them in the matter of personal cleanliness, but there is one custom amongst the industrial classes of France which it would really be wise to copy; namely, the use of the blouse or over-covering, which they put on when they are at work. The blouse not only keeps all clean beneath it, but it preserves from wear, and when it is made of strong homely material, is an economy of singular value.

#### CLEANLINESS IN THE HOUSE.

Cleanliness in the house is the next topic to be dwelt upon. A clean home is a pleasant home a thrifty home and a healthy home. Cleanliness in the house means, first and foremost, cleanliness of light. No house can be clean that is dark; no dark room can be kept clean, for dirt must be seen to be removed. "Let there be light," is said to have been the first

command, and truly no command should ever stand before it or bar its way. Last century the purblind statesmen who preferred taxation at all costs to health at no cost, shut out the light from British houses, and thereby brought in diseases like a flood. Pure light purifies; destroys the organic poisons of spreading diseases; makes a cheerful countenance; gladdens the heart, causes the blood to flow quickly, brightly, and of natural hue. Plants, the universal purifiers for man, taking up his breath, living on his breath, and giving it him back again in food produce, sicken and die if they have no light, but live and grow, and grow rich in the waves of this their natural inheritance. More light! more light! exclaimed the dying German poet Goethe. More light! more light! exclaims the sanitarian as he looks on the masses that are dying prematurely in large dense populations, and touched by him "who is clothed with light as a garment," sighs with them over their sorrows, sufferings, and oppressions.

To cleanly light, should be added clean water in the house, for impure water is a bearer of disease. No fact of modern science has been more decisively proved than this one about water, and the danger of having water for domestic use that is charged with organic matter. By impure water many of the most fatal diseases may be carried. Cholera has been carried by it, in what may be considered, a wholesale carrying. Typhoid has been carried by it, and quite recently I have had to trace a most severe outbreak of this disease, typhoid, to an impure water with which utensils used in a dairy were washed, and which was added to milk supplied to families that were fed with milk from that dairy. The poison of the disease was distributed by that supply. Each householder ought, therefore, to insist on having pure water in his household, and in having it in what is called constant supply; not stored up in tanks and cisterns in the house over water closets and other impure places; not stored up at all, in fact, but laid on direct from a main reservoir in which it is held in a perfectly pure and wholesome condition, containing no substance that can produce disease.

To make assurance doubly sure, it is well to have in every house a good charcoal filter. This filter every working man can make for himself who can burn charcoal, grind it into a coarse powder, place it in a barrel or earthenware reservoir, so as to make it a filtering bed a few inches thick, and put a tap underneath for drawing off the water that has passed through the purifying substance. I have seen some of the most simply constructed filters of this kind answer the purpose for ordinary filtration admirably. I do not wish you, however, to infer that when a household water is charged with organic sub-

stance mere filtration will remove that. It will not. But boiling will; and so if your water be even bad, it can be rendered serviceable by boiling it first and then submitting it to the filter. In times of danger this is neither hard to remember nor to carry out.

To cleanliness of water in the house must be added cleanliness of the air which is contained in the house. In towns like this I know how hard it is to keep the air of a house pure. I know well how dust and dirt will force their way in. I know how in close rooms, in small rooms, in rooms built for working men and women on bad plans, it is almost impossible to keep the air pure from what is cast off by the bodies of those who live in them. And yet a great deal can be done. The great point, even in a town such as Newcastle, is to let in the air freely from without, and to encourage it freely to depart by the chimney flue through an opening as near to the ceiling as can be obtained.

Keep ever in mind, then, these three necessities of cleanliness—clean light, clean water, clean air.

#### CLEANLINESS IN FOOD AND FEEDING.

Let these suggestions respecting cleanliness suggest others, and of all two others: I mean cleanliness in food and feeding, and cleanliness in work. There is a common saying that every man must in his lifetime "eat his peck of dirt." Don't accept or believe it, for there is no *must* in the question. A man may do so, and perhaps many men do; but *must!*—not a bit of it. Every thing that is taken into the body should be clean, clean from elements of disease, clean from elements of dirt. Every utensil from which food is taken should be clean; every cloth used for cleansing and drying the utensils should be clean; every drop of water used for cleansing cooking utensils, as well as for cooking itself, should be clean. I need not tell practical people like you how to be clean in cooking, for you know how as well as I; but there is one matter bearing on the practice which I must mention. I am bound to name a custom or fashion which I notice amongst working men in the Metropolis, where I live, and which I fear is a custom carried out here. I hope it is not, but I fear it is. This is the fashion. If I go out in the early morning, and meet working men going to work, I see it every morning. I see these men trudging away to work, each man carrying his dinner, and it may be the whole of his food for the live long day, tied up in a cotton pocket handkerchief. I have seen worse than this. I have seen this food so

tied up, this food which is about to become the bone, the flesh, the blood of the man who owns it, put on one side in the workshop, anywhere; tied to the steps of a ladder; cast on a bundle of shavings; hidden away in a corner; as if it were the last thing that had to be considered.

Well, I tell you, plainly, that all such negligence is uncleanly and wrong; wasteful and uncleanly. It is one of those destructive and thoughtless proceedings which occur not from necessity, but from sheer want of thought. Food, the best of food, treated in such a manner, becomes dry, hard, tasteless, indigestible. Food, the best of food, so treated is exposed to endless impurities, and is a source afterwards of actual danger. I should, therefore, be doing a very useful service if by this lecture I could make a reform in only this one particular. Indeed, I should be fully content to win this single point alone. At the same time I do not feel that it is asking much to beg for it. There is not one working man who could not at a very little cost of labour and money make for himself a light basket cleanly lined for carrying his own food, which again I call his own bone, flesh, and blood. In the end the cost, too, would quickly be saved, for there would be saving of food from the very outset of the reform.

#### CLEANLINESS IN WORK.

Cleanliness in working at some special occupations is another part of the gospel of cleanliness which must be particularly called to remembrance. I could fill up my lecture, and a long lecture, in treating on this subject, so many things crowd on my mind; but I will confine what I have to say to two observations. There are great numbers of working men and women who work exposed to dusts, such as flax dressers, as pearl cutters, knife grinders, glass-paper makers, stone cutters, and the like. These draw into their lungs fine particles of dust, and in that way induce some of the most painful and fatal of human diseases. The diseases are induced because the air taken into the lungs of the workers is not cleared or cleansed of dust. The fault is the fault of the worker to a large, if not the whole, extent of the evil, for most effective and simple plans have been invented to exclude the dust. I have invented a mask for this purpose; Mr. Baker has invented a mask; and many others have done the same. In the days of the corn law rhymer, Ebenezer Eliot, Messrs. Abraham and Eliot invented for the knife grinders a magnetic table, which drew the fine particles of steel dust to itself. Here are methods which one would think all would follow. Will they? Not at all. In Eliot's time the

aid was so slighted that in lines piteously plaintive he was led to write two of the most touching historical verses in our mother tongue.—

“There draws the grinder his laborious breath,  
There, coughing, at his deadly trade he bends:  
Born to die young, he fears nor man, nor death—  
Debauch and riot are his bosom friends.  
“Yet Abraham and Eliot,—both in vain,—  
Bid science on his cheek prolong the bloom.  
He will not live! He seems in haste to gain  
The undeserv'd asylum of the tomb,  
And, old at two-and-thirty, meets his doom.”

To this day some similar evil spirit of carelessness or opposition stands in the way of succour to those who still die from inhaling the air charged with dusts. Of those who are engaged in flax-working in Belfast district, Dr. Purdon, one of the certifying surgeons under the Factory Act, reported but a few years ago that in the factories under his care, if a girl, wishing to be a “carder,” gets a card under eighteen years of age, she very rarely, if constantly employed at her work, lives beyond thirty years. In a statement of this kind there is something so grimly fearful, the mind is astounded as it receives it, as it takes in the further fact that the least objection made by the worker to the mask, or other preventive measure against the fatal uncleanness which is the cause of all the suffering and death, is sufficient to prevent the continued use of the preventive measure, however easy it may be to use, and however effective may be its use.

I press these facts on your attention, with the hope that the reflection they may engender may help to dispel objections that have their origin in mere sentiment, and are beyond anything I can say, in addition, opposed to all progress in the way of reform.

The other evil to which I refer as bearing on uncleanness in work, has reference to the unnecessary dangers in which those workmen and workwomen are exposed who are working in lead. You are as conversant with these dangers as I can be. You know that some suffer from lead colic, others from palsy, others from a kind of wasting or consumption, and that many die. Perhaps you know also, from what you have seen, that some who suffer disease from lead transmit the disease caused by the lead poisoning to their offspring. I need not dwell on these evils; they are too well known. I will therefore dwell only on the mode in which the evil is most commonly produced. The lead is supposed by some, to be absorbed into the body by the skin from the solutions in which the lead exists, and the view may be true.

But I have found by an enquiry I once made, that the absorption of the lead is much more frequently by the mouth. The worker is not cleanly at his work. He goes from his labour, his hands imperfectly washed, and with the hands in that state he takes up his food at his meals. Thus, day by day, from his own hands, he picks up, with the food he swallows, minute traces of lead, and as lead is what we doctors call a cumulative poison, that is to say, a poison which accumulates in the body, he, in time, becomes charged with sufficient of it to be affected by the diseases which spring from it. This is clear enough as a matter of common sense as well as of common experience. But see the importance of the knowledge rightly applied. It tells us what is as true an experience as the experience above stated, that if lead workers will do two cleanly acts—if they will cover the skin from the solution; or, if they will, before going to their meals thoroughly wash the hands and arms; and pray mind this, if they will follow the simple precaution of taking up all the food that enters the mouth with a fork, never letting the hand touch even the bread or any other food that is eaten, they will save themselves, without any difficulty, from the special perils to which they are now exposed.

#### CLEANLINESS OF LIFE.

To all these customs of cleanliness of person and surroundings I must add one more, and that is cleanliness of mind, heart, and conversation. Whatever suggests uncleanness in these avenues of life, suggests and fosters the worst uncleanness of physical life. Uncleanness of this moral kind presents itself in many forms. Man was not made to rest except to rust, and idleness is, therefore, in this list of evils. Passion is on the list, for it leads to disturbance of true physical action, to impurity of blood, of secretion, of tissue. Intemperance is a very curse of uncleanness, the foulest perhaps of all, and through the moral nature, the most deadly to mind as well as body.

#### PRACTICAL CONSIDERATIONS.

Before I conclude, permit me in a few sentences to direct your minds to the consideration of the great and urgent national advancements for health which it is the duty of all classes of the community, but especially of the industrial classes, since they are the worst sufferers, to enforce on the Government, whatever Government may be in power. These advancements as they stand for legislation affect not one party but all parties; not one section of the nation, but the whole of the nation. They would constitute a charter of health, every section of which is in favour of cleanliness in one or other representation of it. In

this charter some of the leading parts might be carried out by local legislation alone and at once; others by general or Parliamentary legislation.

The first advance that the working classes should cry for, in every town, is for a more extended system of public baths and wash-houses. These carry with them the better cleansing of the body itself, and of the articles in which it is clothed. Next to this should come the demand for public laundries, with proper conveniences attached for the disinfection of infected clothing, so that the organic particles of disease by which the great and fatal pestilences are spread should not pass from person to person with the linen and clothing which is called clean, and which is so often sent home falsely named under that disguise. A third matter to urge on authorities is the absolute necessity of giving a pure water supply, a supply disconnected in the most perfect way from the sewage system of the town or the village; a supply that is constant, and requires no cistern in which the pure fluid has to be stored. A fourth improvement to be demanded is for open places in all crowded localities, more space for trees and flowers and grass, with pleasant walks in parks for the people of all ages, and especially for the young, who now fade in the gloom of the streets and alleys and slums of great cities. A fifth necessity to urge for, to insist on, is for better houses for the working populations; houses built on dry and wholesome foundations; houses built of sound and healthy materials; houses constructed with all the modern advantages of drainage, so that each house is absolutely cut off from the sewer; houses that are well arranged for warming and ventilation, and filled with sunlight whenever there is sun; houses placed not miles away from the workshop, and which it is part of a day's labour to reach, to and from the daily labour, but in proximity to the workman's work. A sixth advancement which should be insisted on is the erection of workmen's workrooms in all towns; rooms where no family would be allowed to live, but in which under proper supervision, every working man or working woman ought, for a small sum per week, have a clean and convenient and comfortable workroom, in which he or she could carry out their occupations away from the living room where many are forced often to abide, where the infectious sick are compelled often to lie, and from whence, too often, the particles of disease are carried on the articles of manufacture from the unfortunate home manufactory to the home of the purchaser. A seventh and last demand for improvement which ought to arise from the working classes of all towns, and from none more than from Newcastle, is for the purification of the atmospheric air from smoke and all impure vapours and gases in which plants

will not live, and in which man, who was made to breathe in a garden, may live in health. To clear towns like Newcastle of smoke and bad air, to transform them all into gardens, is not a question of science any longer, but of legislation. Science, freed from the shackles of selfishness, apathy, and thoughtlessness, which stand in her way, could make the clearance as easily as she could make a railway tunnel, open a way through a forest, or drain a marsh. It is all a matter for legislation, and it is only for the makers of our laws to say it must be done, and it will be done.

And now, working men and women, I leave these truths with you. Keep them clearly in your minds, treasure them in your hearts; determine resolutely for them, and, lifting up your powerful voices above all the rest, be assured that you can do more to secure the attainment of every point of the charter of health than any power that now exists. Exerting your power, you will become the benefactors of all sections of the community, but it is your own selves that will benefit the most by the effort. It is you who will be raised from poverty to competency, from despondency to happiness, from weakness to power. It is you, above all others, who will exchange the sullied, sombre raiments of disease and early death for the bright and spotless vestments of perfect health and perfected life.

Mr. W. D. STEPHENS (who had taken the chair in place of Mr. Cowen who had to leave before the conclusion of the lecture) asked the meeting to join with him in giving a most cordial vote of thanks to Dr. Richardson for his very instructive lecture. He was sure they would all agree with him in saying that it was a cause of great thankfulness that the Doctor used the talents God had given him for the purpose of doing good to his fellow-creatures. Many men possessed great talents and powers of thinking, but had not the power of communicating that Dr. Richardson had, and they all recognised in him, besides being the deliverer of the lecture that night, one of the most eloquent and powerful advocates that the temperance cause had ever had in this country. He asked them to show, as a Newcastle audience only could show, their appreciation of the lecture they had heard that night.

Dr. RICHARDSON, in replying, said Napoleon used to say of one of his generals that he was the spoilt child of fortune. He (the lecturer) should soon begin to think himself a spoilt child of fortune, if he met with many such receptions as he had now received. He had been at Newcastle before, he remembered that he then experienced the same kind and friendly greeting, and that led him to hope that, busy as he was, he might some day try to return and court their kindness once again.

## REPORT

OF THE

### JUDGES OF THE EXHIBITION.

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We, the undersigned, the Judges appointed by the Council, beg leave to recommend to the Council the following distribution of Medals and Certificates:—

#### THE RICHARDSON GOLD MEDAL.

For an Exhibit selected from the Entire Exhibition to be awarded in case of pre-eminent merit only.

We recommend that this Medal, which has not been awarded since the Exhibition at Stafford in 1878, be awarded to:—

MESSRS. MATHER & ARMSTRONG, *Newcastle-upon-Tyne*, for Siemens's Regenerative Gas Burner.

#### Silver Medals offered by the Exeter Gas Company.

Four Silver Medals were offered by the Exeter Gas Company for the best Gas Stoves exhibited under the following classes:—

1. For the best Gas Stove or gas apparatus for cooking purposes for families, including a sufficient supply of hot water.
2. For the best Gas Cooking Stove for an artisan's family of from four to eight persons.
3. For the best and most economical Open Gas Fire.
4. For the best heating arrangement for general purposes, among which are included the best method for heating baths.

One has already been awarded at a previous Exhibition for the best heating arrangement for general purposes. The Stoves in competition for the others are all deferred for further practical trials.

#### MEDALS.

We recommend that Medals should be awarded to the under-mentioned Exhibitors:—

BRADFORD, THOMAS, & Co., *London*, for Washing Machines.  
 BRITISH SANITARY COMPANY, *Glasgow*, for Dry Earth Closet.  
 HAYWARD, TYLER & Co., *London*, for Full-flush Valveless Closet.

- MANLOVE, ALLIOTT, FRYER & Co., *Nottingham*, for Fryer's Patent Destructor, Fryer's Patent Carbonizer, and Firman's Patent Dessicating and Rendering Apparatus.
- MATHER & ARMSTRONG, *Newcastle-upon-Tyne*, for Siemens's Patent Regenerative Gas Burner.
- ROSS, J. A. G., *Newcastle-upon-Tyne*, for Silicate Cotton (Slag-wool).
- SOCIÉTÉ FRANÇAISE D'HYGIÈNE *Paris*, for their exhibit of Books on Hygiène.
- STOTT, JAMES, & Co., *Oldham*, for Patent Mercury Gas Governor.
- WARD, O. D., *London*, for Household Water Closet.
- WILKINSON, W. B. & Co., *Newcastle-upon-Tyne*, for Damp-proof Concrete Pavement.
- WILSON ENGINEERING COMPANY, *London*, for improved Wilson Range with Steel Boiler and non-conducting Jacketting.

The Wilson Cooking Range, to which a Medal was awarded at Exeter, is again recommended to receive a medal for notable improvements in its construction. We recommend that with this exception the Exhibits which have already received Medals at previous Exhibitions of the Institute be excluded from awards of Medals, but that some of them should receive Certificates of Merit, and these we have distinguished in the following list by asterisks.

#### CERTIFICATES OF MERIT.

We further recommend that Certificates of Merit be awarded to the undermentioned Exhibitors:—

- ANGELL, A. T., *London*, for Patent Air-tight Man-hole Door.
- ARDEN, HILL, & Co., *Birmingham*, for Solid Flame Boiling Stove.
- BOWDEN, WILLIAM, *London*, for Patent Automatic Chariot for Children.
- BRADY & MARTIN, *Newcastle-upon-Tyne*, for Central Tube Water Mattress.
- BRADY & MARTIN, *Newcastle-upon-Tyne*, for their exhibit of Instruments used by Medical Officers of Health.
- BUCHAN, W. P., *Glasgow*, for Improved Drain-pipe with Access Cover.
- BUCHAN, W. P., *Glasgow*, for Patent Disconnecting Drain-trap.
- CAPPER, SON, & Co., *London*, for Brian Jones's Patent Joint for connecting Closet with Soil-pipe.
- \*CHORLTON & DUGDALE, *Manchester*, for "Excelsior" Spring Mattress.
- CREGEEN, H. S., *Bromley*, for Patent Air Inlet Head for Drain Ventilation.
- CRAIG, J. & M., *Kilmarnock*, for Maguire's Patent Cradle Joint for Drain-pipes.
- CRAIG, J. & M., *Kilmarnock*, for Buchan's Patent Drain-trap and Drain-pipes, with Access Cover.
- CRAIG, J. & M., *Kilmarnock*, for White Enamelled Fire Clay Sinks.
- DAVIS, JOSEPH & Co., *London*, for New Oven Pyrometer.
- DINNING & COOKE, *Newcastle-upon-Tyne*, for Cast Iron Channels for Stable Drainage.

- DINNING & COOKE, *Newcastle-upon-Tyne*, for George's Calorigen.
- DINNING & COOKE, *Newcastle-upon-Tyne*, for Jennings's Universal Shampooing Apparatus.
- DINNING & COOKE, *Newcastle-upon-Tyne*, for their exhibit of Grates, Mantel-pieces, and Over-mantels.
- DOULTON & Co., *London*, for Anti-percussion High-pressure Bib Valves.
- DOULTON & Co., *London*, for Bath Locking Valves, for preventing waste of water.
- DOULTON & Co., *London*, for Latham's Flap Valve.
- DOULTON & Co., *London*, for Patent Joint for Drain-pipes.
- DOULTON & Co., *London*, for Reversible Inlet Gully, with Dished Stoneware Cover and Iron Grating.
- DOULTON & Co., *London*, for their Flush-out Closet.
- DOULTON & Co., *London*, for Tip-up Lavatory Basin.
- \*DOULTON & Co., *London*, for Ventilating Tile Stoves.
- FELL, J. & Co., *Wolverhampton*, for Clark's Patent Anti-splash Tip-up Lavatory Basin.
- FELL, J. & Co., *Wolverhampton*, for Smith's Patent Cast Lead Syphon Traps.
- FELL, J. & Co., *Wolverhampton*, for their exhibit of Water-taps.
- FORREST, WILLIAM, *Newcastle-upon-Tyne*, for the Albo Carbon Light.
- HAMILTON, WILLIAM, *Brighton*, for Invalid "Grasshopper" Couch.
- HANCOCK, F. & C., *Dudley*, for Patent Machine for Washing and Peeling Potatoes.
- HARRIMAN, W., & Co., *Blaydon-upon-Tyne*, for Fowler's Patent Water-closet.
- HAYWARD, TYLER, & Co., *London*, for Shower and Douche Bracket.
- HERON, T., *Manchester*, for Patent Duplex Burner.
- JEYES' SANITARY COMPOUND COMPANY, *London*, for Jeyes' Perfect Purifier.
- KIRSOP & Co., *Newcastle-upon-Tyne*, for Paragon Washing Machine with Canadian Washer.
- MAGUIRE & SON, *Dublin*, for Dr. Scott's Disinfecting Apparatus.
- MALING, C. T., *Newcastle-upon-Tyne*, for his exhibit of Sanitary Earthenware.
- MALING, C. T., *Newcastle-upon-Tyne*, for Lavatory Basin with Flushing Rim.
- MANLOVE, ALLIOTT, FRYER, & Co., *Nottingham*, for Lyon's Patent Disinfecter.
- MATHER & ARMSTRONG, *Newcastle-upon-Tyne*, for Hink's Patent Duplex Lamp with Extinguisher.
- MATHER & ARMSTRONG, *Newcastle-upon-Tyne*, for Steam Heating Apparatus, combining heating and ventilating.
- MITCHELL, JAMES, *Newcastle-upon-Tyne*, for Mitchell's Patent Steam Washer.
- MURTON, H. A., *Newcastle-upon-Tyne*, for exhibit of Indiarubber Vessels for hospital use.
- NAILSWORTH FOUNDRY COMPANY, *Bristol*, for Morgan's Stench Exhaust.
- RIMINGTON BROS. & Co., *Newcastle-upon-Tyne*, for Dean's Gully Trap.



- RIMINGTON BROS. & Co., *Newcastle-upon-Tyne*, for Enamelled Fire Clay Bath.
- SILICATED CARBON FILTER COMPANY, *London*, for Silicated Carbon Filtering Material.
- SMITH, ELDER, & Co., *London*, for their exhibit of Sanitary Publications.
- SMITH, JAMES, *Liverpool*, for Open Grate for consuming Smoke.
- STRAKER & LOVE, *Newcastle-upon-Tyne*, for their exhibit of large Fire-clay Drain-pipes.
- THOMASSON & KEY, *Worcester*, for Cup Grating for Sinks.
- THORNBURN, WILLIAM, *Borough Bridge*, for Tubular Calorifer for Greenhouses.
- TOWNSEND & Co., *Newcastle-upon-Tyne*, for their exhibit of China Cups and other Vessels for invalid use.
- TYLOR, J. & SONS, *London*, for Hospital Slop Sink with Patent Waste-not Regulator Valve.
- TYLOR, J. & SONS, *London*, for Bath Locking Valves for preventing waste of water.
- TYLOR, J. & SONS, *London*, for Flushing-rim Lavatory Basin with Quick Waste.
- TYLOR, J. & SONS, *London*, for Patent Flush-out Urinal Basin.
- TYLOR, J. & SONS, *London*, for Patent Joint for Lead Pipes.
- TYLOR, J. & SONS, *London*, for Terry's Patent Pedal-action for Water-closets.
- TYLOR, J. & SONS, *London*, for Waste-not Regulator Valve.
- \*WARD, O. D., *London*, for Bean's Direct Acting Valveless Waste Preventer.
- WATSON, HENRY & SON, *Newcastle-upon-Tyne*, for the "National" Water-closet.
- WATSON, HENRY & SON, *Newcastle-upon-Tyne*, for Waste-preventing Flushing Syphon.
- WATSON, HENRY & SON, *Newcastle-upon-Tyne*, for "Crown" Cottage Water-closet.
- WHITE, WILLIAM, *Abergavenny*, for Hygeian Rock Building Composition.
- \*WOOLLAMS & Co., *London*, for Non-arsenical Wall Papers.
- WRIGHT & STEVENS, for Syphon Flushing Cistern.
- WRIGHT, JOHN & Co., *Birmingham*, for the "Cosey" Portable Open Gas Fire, with Platinum Wire and Asbestos Packing.

N.B.—Objects exhibited or invented by any of the Judges themselves are excluded from awards of Medals or Certificates.

#### EXHIBITS SELECTED FOR FURTHER PRACTICAL TRIAL :

With regard to the following Exhibits, we are unable to give our decisions until we have submitted them to a more complete and extended practical Examination than is possible at the Exhibition:—

#### Paint and other Protectives.

- ALBISSIMA PAINT COMPANY, *London*, Albissima Paint.
- SANITARY PAINT COMPANY, *Liverpool*, Sanitary Paints.

#### Machinery adapted for Sanitary Purposes.

- ANDREW, J. E. H. & Co., *Stockport*, Bishop Gas Engine.
- TURNER GAS ENGINE COMPANY, *St. Albans*, Gas Engine.

#### Water Closets.

- BUCHAN, W. P., *Glasgow*, Carmichael Wash-down Water-closet.
- FELL, J. & Co., *Wolverhampton*, Dodd's "Wash-out" Water-closet.
- RIMINGTON BROTHERS & Co., *Newcastle-upon-Tyne*, Bostel's "Excelsior" Closet.

#### Apparatus for Water Supply.

- MAGUIRE & SON, *Dublin*, Flushing Tanks.
- DOULTON & Co., *London*, Syphon Flushing Tank.
- DOULTON & Co., *London*, Anti-percussion Ball-valve.
- DOULTON & Co., *London*, Waste-preventing Closet-valve.
- TYLOR, J. & SONS, *London*, Syphon Flushing Tank.
- WATSON, HENRY & SON, *Newcastle-upon-Tyne*, Adams's Syphon Flushing Tank.
- ROBERTS, CHARLES G., *Haslemere*, Buck's Automatic Rain Water Separator.

#### Heating Apparatus.

- ARDEN, HILL & Co., *Birmingham*, Asbestos Open Gas Fire.
- DAVIS, H. & C., *Camberwell Road*, Asbestos Open Gas Fire.
- DEFTY, HENRY & Co., *London*, Gas Burner for Economising Consumption of Gas.
- DINNING & COOKE, *Newcastle-upon-Tyne*, Dr. Adams's Gas Stove.
- PARKER, T. E., *London*, Smoke Consuming Grate.

#### Cooking Apparatus.

- ARDEN, HILL & Co., *Birmingham*, Gas Cooking Stoves.
- DAVIS, H. & C., *London*, Gas Cooking Stoves.
- WRIGHT, JOHN & Co., *Birmingham*, Gas Cooking Stoves.

#### Ventilation.

- KITE, C. & Co., *London*, Outlet Ventilator.
- NORTON VENTILATOR COMPANY, *London*, Norton Ventilating Apparatus.
- THOMASSON & KEY, *Worcester*, Inlet Ventilator.

## Foods.

BOWDEN, WILLIAM, *London*, Indian Teas, Chutney, and Sliced  
Mangoes.  
EDMUNDS, J., *London*, Currie Powders.  
IRVINE & CO., *Gateshead*, Mustard.

## Filters.

HARRISON, J. & H., *Newcastle-upon-Tyne*, Cheavin's Self-Acting  
Cistern Filter.  
MAIGNEN, P. A., *London*, Improved Filtre Rapide.  
MATHIE & ARMSTRONG, *Newcastle-upon-Tyne*, Slack and Brownlow's  
Patent Compressed Charcoal Filter.

## Mineral Waters.

BRADY & MARTIN, *Newcastle-upon-Tyne*, Pitt's Mineral Waters.  
BRITISH & FOREIGN MINERAL WATERS COMPANY, *Glasgow*, Mineral  
Waters.

## Disinfectants.

ANTISEPTIC APPARATUS MANUFACTURING CO., *London*, Red Cross  
Antiseptic Fluid.  
SANITAS COMPANY LIMITED, *London*, Sanitas Disinfectant.  
SELLERS, JOHN, *London*, Potash, Coal Tar, and Carbolic Soaps.  
STANDEN, RICHARD, *Preston*, Disinfecting Powder.

W. H. CORFIELD, *Chairman*.  
W. EASSIE.  
ROGERS FIELD.  
J. WALLACE PEGGS.

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## APPENDIX.