REPORTS

ON

SANITARY ENGINEERING IN HOUSES, HOSPITALS, AND PUBLIC INSTITUTIONS.

BY WILLIAM EASSIE, C.E.

V.—WARMING AND VENTILATION OF HOUSES.

EVERY now and then, as if by sound of trumpet, the attention of newspaper readers is drawn to the condition of the houses which they inhabit; and but for this periodical marshalling together of sanitary teachers, it is not to be doubted that disease would be more rife amongst us. The different captains deliver their separate messages to the community, and then fall back into the ranks. This open method of lecturing the people is not new; for, in the matters at least of ventilation and warming, it was practised a century ago, and the crusades of Polignac in 1713, of Franklin in 1745, and of Arnott in 1838, will especially recur to the mind. And it is beyond dispute that the best fireplaces and stoves of the present day—those which best radiate, reflect, and conduct heat into the room—are based upon the patterns indefatigably recommended by these writers. The systems for heating our monster buildings are in some sort also derived from the ancients. We have but added the chimney with which they were unacquainted, and some smoke-consuming economies which arose from our wholesale possession and extravagant use of coal. The principle of sewer-ventilation is not even due to this generation; for its necessity was recognised by the Romans. Trapping is a dogma entirely of our own promulgation; and the faculty knows what this boxing up of the sewer-gases has done for us.

To revert to fire-places for a moment, there are nearly two hundred different descriptions of grates, stoves, and other heating goods in the market at the present time; and the chance is, that the householder chooses a pattern which has been repeatedly condemned by science and experience.

There is too fatal a facility for patenting things just now; and very often the showiest arrangement pushes the more deserving ones to the wall. A title of the badly arranged houses in this respect is also due to the practice of incoming owners reserving to themselves the purchasing of the grates and chimney-pieces—the architect offering no remonstrance. In many other cases the site or the outside of the house has swamped the major part of the capital; and the interiors, particularly the domestic fittings, have been parsimoniously treated. Mistakes, too, have been made in foolishly introducing untried novelties into so important a section of the domicile.

Many of these evils would die of inanition, if our chief towns possessed institutions where these necessities could always be seen in full working order. We have a few economic museums, it is true; but they lack the notoriety which results from national support; and, if not carefully watched by their philanthropic promoters, these otherwise excellent places are apt to degenerate into mere advertising pantechnica. A permanent sanitary temple, on the principle of that inaugurated at Leeds in 1871, with the conveniences of action, is what is wanted in every industrial centre. Paris had an exposition of this kind only last year.

The forthcoming exhibition of cooking contrivances which is to be held at Kensington in a few months' time will also edify many thousands of people. The fault is, that these dissolving views are speedily forgotten, and the old race goes on, in which the greatest advertiser of his goods wins the day. What is wanted is, a building where all that appertains to health and house-comfort can be exhibited, seen in use, and studied in detail. Such an edifice, under proper *surveillance*, could also be made useful in instructing our but half-educated servants, and prove self-supporting. Such a structure would also afford an admirable lecture-room for those worthy volunteers who aim at ameliorating our domestic woes; for they would have before them, in illustration, the very things which have proved commendable.

And there are at the present time in our metropolis several bodies, such as the Social Science and the National Health Societies, which could easily combine and take the conduct of so truly a patriotic move in the right direction.

A perusal of the many systems of ventilation advocated in the daily press during the past year would be sufficient to prove that we are very far from being unanimous in opinion as to what plan is best for even an

ordinary sitting room. In the patent office lie over seven hundred schemes for the ventilation of houses, shops, ships, and mines, the monopoly fees of which, joined to the necessary cost of previous experiment would doubtless represent a very large sum. If each patent system had been accorded a trial at some such institution as the one just hinted at, we should, perhaps, have long ago hit upon an universally accepted plan. Many scores of small improvements on the general plan we should be sure to have for all time; but we should not have been found wrangling at the present day as to the very alphabet of the science.

We are now about to suffer from a plethora of gas-schemes, and some are in the market already. Experiments have been made by each rival company, and testimonials have been duly signed; but the experiments were not made where the public could very well witness them or test their results, even if they lasted long enough, and the consequence is that the non-shareholding public will be in doubt for a long time to come. Surely it is not as it should be, that we, who can point with pride to the courts in our Crystal Palace, where nearly every kind of architecture can be seen from the Egyptian to the Renaissance, possess not even a building where the ordinary appliances for health and comfort can be seen and studied in a reasonable way. We may inspect the *dissecta membra*, perhaps at some out-of-the-way place or office, but not the living thing.

If the subjects of ventilation and warming are still enveloped in a certain haziness, it is pleasant to think that the subject of house-drainage now enjoys the broad light of day. No differential calculus is needed in studying how to drain our dwellings and their offices. This last science is removed from an almost metaphysical domain, and brought down to one of simplest logic. It is now nearly universally admitted that a basement floor should be concreted and protected from wet subsoil; the closets built externally and their soil-pipes ventilated; the sink, bath, and cistern wastes made to deliver over a prepared portion of the drain, and a disconnection effected between the house-drain and the sewers; and so on. Sumptuousness may even preside over these simple precautions; beneath the basement concrete may be laid a bed of charcoal, as recommended by Mr. Rawlinson; automatic disinfection can also be practised over the sinks and closets; and even deodorising trays may be placed in the traps and the ventilating shafts of the drains.

The same simplification has to be brought to bear upon ventilation, and a plain code laid down by which we can secure a thorough withdrawal of the air vitiated by respiration and gas-burning. Warming is in as bad a plight as ventilation; for, in five-sixths of the houses now springing up in our towns, as anyone can see, no provision is made for supplying the fires with fresh air from without. The householders will suffer, but they can do little or nothing. They are mostly in the position of a magistrate who has to consult, in the absence of the experienced clerk of the court, a hundred bewildering precedents in Common Law.

THE NEW EDITION OF THE UNITED STATES PHARMACOPEIA.

ABOUT every ten years, the United States *Pharmacopœia* is revised by a committee appointed for the purpose. We have the last three revisions or editions before us; that published in 1855 being the second edition of the revision in 1850, the next issue in 1863, and the book now issued in 1873. It is by carefully examining the three, that we are best able to form a judgment of the changes from time to time made in this national work.

We make an extract from the preface of the first of these books: "It is of the highest importance that medicines having the same names should have the same composition; and as British works on medicine are much read in this country, it would lead to never-ending confusion if the substances they refer to by name, should differ materially from those known by similar names with us. It has therefore been a general aim to bring our pharmacy into as near a correspondence as possible with that of Great Britain."

One difficulty in comparing the United States *Pharmacopœia* with the British *Pharmacopœia*, is the difference in the weights and measures. In the British *Pharmacopœia* the ounce weighs 437.5 grains, and the fluid ounce of water weighs 437.5 grains. In the United States *Pharmacopœia* the ounce weighs 480 grains; but the fluid ounce of water weighs 455.7 grains. And the difficulty is increased by the *Pharmacopœia* having ordered some liquids by weight, others by measure.

We will take as an example spirit of chloroform, the strength of which we notice has been altered in the present edition of the United States *Pharmacopœia*. The British *Pharmacopœia* orders chloroform

one fluid ounce, rectified spirit nineteen fluid ounces, so that twenty minims contain one minim of chloroform.

The United States *Pharmacopæia* orders purified chloroform one troy ounce, diluted alcohol twelve fluid ounces; the chloroform by weight, the alcohol by measure. The ounce by weight, as explained above, is of a different value from the ounce by measure; so that to find the quantity of chloroform contained in a given measure of the preparation, we must convert the quantities of chloroform and diluted alcohol into grain-measures, allowing for the specific gravity of the chloroform.

In the preface to the issue in 1863, it is stated that "as weighing is more convenient than measuring, in the instance of heavy corrosive liquids, the strong mineral acids are always taken by weight; and that the fixed oils are taken by weight, a change of plan called for by their adhesive nature, which renders it more convenient to weigh than to measure them."

The preface to the present issue (1873) does not refer to liquids being weighed, so we presume the reasons for weighing some liquids in this issue are the same as those set forth in the preface to the previous issue. If so, why is chloroform, which is not corrosive, and does not inconveniently adhere to the measure, weighed; and glycerine, which does adhere to the measure, measured? A resolution was passed by the Convention for the guidance of the Committee—"That measures of capacity be abandoned in the *Pharmacopæia*, and that the quantities in all formulas be expressed both in weights and in parts by weight." The Committee appear to have taken a middle course. Strong nitric acid is ordered to be weighed. Strong hydrochloric acid is ordered by measure in one case and by weight in the others. Strong acetic acid is ordered in each case to be measured. Syrups are measured. Valerianic acid is ordered by measure in making valerianate of ammonia, and by weight in making valerianate of quinine. Solution of subacetate of lead is ordered by measure in ceratum plumbi acetatis, but by weight in linimentum plumbi subacetatis.

This must be very perplexing to those who have to recollect the forms and strengths of the preparations, as the strengths would vary considerably, according to the ounce being weighed or measured in any particular case.

The British *Pharmacopæia* has stated under each substance the strength of the preparations into which it enters, and under the preparation the dose. We think this would have been serviceable in the present state of the United States *Pharmacopæia*. The terms "pound" and "gallon" have been discontinued in the United States *Pharmacopæia*, and the desired quantity expressed in ounces and pints. We think the term "pint" might have been advantageously discontinued and the quantity expressed in ounces: the American pint being sixteen fluid ounces, the English pint twenty fluid ounces.

[To be continued.]

THE FELLOWSHIP OF THE COLLEGE OF PHYSICIANS OF LONDON.

At the meeting of the College of Physicians on Tuesday, the 18th instant, the following report of the Council was presented.

In accordance with the resolution of the College of October 18th—namely, that the question of the mode of nomination of Fellows be referred to the Council for consideration and report—the Council begs leave to state that the subject referred to it has been most fully and carefully considered, and its report is now submitted to the College. The Council considers it desirable, in the first place, to remind the Fellows of the bye-law at present in force having reference to this question. It is as follows.

"The Council shall annually, to the last Thursday in July, nominate, from the members of the College of not less than four years' standing, those who, in their opinion, have sufficiently distinguished themselves in the practice of medicine, or in the pursuit of medical or general science of literature, to be proposed for election as Fellows at the next ordinary general meeting of the College; and no member shall be so nominated who has not received the votes of at least ten members of the Council."

In order to secure the attendance of the members of Council at the meeting when the nomination takes place, the bye-laws of the College impose a fine of one guinea on each absent member of Council; and the Council now recommends, as a further security for the fuller consideration of the merits of members, that the number required to form a quorum at the meeting of Council be raised to fifteen, the number of votes required for a nomination remaining as at present. The College will readily believe that the Council, in the fulfilment of the difficult

and responsible duty assigned to it, is most anxious that, at the meeting or meetings held for nomination to the Fellowship, the claims of every member of the College should receive the most liberal consideration, and that no member should have the slightest reason for supposing that his claims to the Fellowship have been either overlooked or neglected. With this view, the Council recommends the following plan.

1. That it be an instruction to the Council, in determining the fitness of members for nomination to the College for election to the Fellowship, to take into consideration—in accordance with bye-law, chap. xi, sec. 4—standing in the College; academical honours; distinction in literature or science; professional eminence; public appointments; and social position.

2. That in each year, three months before the meeting of the Council for the nomination of members for election to the Fellowship, a notice to the following effect shall be sent to each Fellow.

It is the duty of every Fellow to assist in the nomination of fit and proper persons to the Fellowship. The duty thus devolving upon every Fellow has respect both to the College and to its members: to the College, since it is only by the election of fit and proper persons into the Fellowship that the College can be advantageously extended and perpetuated; to the members, since every member ought to have full ground for believing that his claims to the Fellowship will not be overlooked or neglected. Your attention is, therefore, directed to the following regulation of the College.

"Any two Fellows of the College may propose, for the consideration of the Council for nomination for the Fellowship, any member of the College of at least four years' standing who has distinguished himself in the practice of medicine, or in the pursuit of medical or general science or literature. The grounds of the recommendation must be fully stated in writing for the information of the Council, and be forwarded to the Registrar on or before the 24th June."

The Council, in conclusion, begs leave to inform the College that, as an additional security against the claims of members being overlooked, it has adopted the following mode of proceeding.

In future, the selection of members to be nominated to the College by the Council for election as Fellows shall be conducted in the following way. A month before the usual time of nomination, a preliminary meeting of the Council shall be held, at which a list shall be drawn up of those members who are selected for consideration. During the interval between the meetings, the Council shall carefully inquire into the merits or disqualifications of those members whose names have been thus selected, so that at the final meeting of the Council for nomination it may be provided with more exact information than has hitherto been attainable.

In the discussion on the Report, it was moved as an amendment that a majority of the Council present at a meeting should nominate, instead of ten as at present. The clause as it stands in the Report was carried, four only voting for the amendment.

An amendment was also moved, to omit reference to the "social position" of candidates for the Fellowship. The clause of the Report was carried by 26 votes against 20.

An amendment was carried by a majority of 25 to 6, that, in place of any two Fellows, any one Fellow may propose a candidate for the consideration of the Council for nomination to the Fellowship.

Dr. C. J. B. Williams had given notice of his intention to propose the following resolution.

"That the list of members to be proposed by the Council for election to the Fellowship be laid before the Fellows before the end of May, and that it shall be open to the Fellows to add to the list the names of any other members whom they may deem deserving promotion to the Fellowship, provided that each member so proposed be recommended by at least three Fellows, with a statement of the grounds of their recommendation. That the list be then suspended in the hall of the College until the midsummer quarterly meeting, when the members nominated shall be balloted for, and those shall be elected to the Fellowship who have a majority of votes of the Fellows present."

He said, however, that approving in general of the alterations that had been made, he would withdraw his notice for the present, in order that time might be allowed to observe the working of the new system.

PROFESSOR BRUECKE of Vienna, after an illness of five weeks from scarlet fever, resumed his lectures on Physiology in the University of that city on Monday last.