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Original Communications.

SANITARY STATISTICS AND PREVENTABLE
DISEASES.

By W. MARDEN, M.D., EX. PRESIDENT COL. PHYS. AND SURG., L.C., EX. PRESIDENT CAN. MED. ASSOCIATION : HON. FEL. MEDICO-BOT. SOC., LOND : HON. FEL. MEDICO-CHIR. SOC. NEW YORK : COR. FEL. OBS. TETRICAL SOC., EDINBURGH : COR. M. LONDON MED. SOC. : COR. M. GYNECOLOGICAL SOC., BOSTON, &c., &c., QUEBEC.

Statistics is that science which has for its object the collection and arrangement of facts, relative to the physical, social, political, financial, intellectual and moral condition and resources of a state or nation. Some departments of statistical knowledge are of very ancient origin, and no nation has made any great progress in civilization, which has not at certain stated periods taken a more or less complete census of its inhabitants. Such statistical records were taken by Jews, Greeks, and Romans, centuries ago. The *census*, as the name implies, was in *ancient* Rome "an authentic declaration made before the *Censors*, by the citizens, of their names, places of abode, &c., and in later times, the Doge of Venice, Tomasso Mocenigo, A.D. 1421., collected valuable materials on the situation of different empires, their monetary systems, finances, public debts, &c. Since that time every civilized nation has adopted systems of statistics, more or less complete, as the basis of legislation, and government. The British Association for the advancement of science has had a statistical section since 1833; and the American Association has a similar section: and the encouragement of collections of statistical matters, is one of the avowed means by which the Smithsonian Institu-

tion, Washington, proposes to diffuse knowledge among men.*

The particular object of this paper, notwithstanding this seeming digression, has reference to one special department of statistics only :—Sanitary or Vital Statistics, in their relation to “preventable” diseases, and the “public health.” They hold precisely the same relation to life and health, that general statistics do to political economy, and the wealth of nations, —wealth having an inseparable co-relation to health.

Sanitary statistics of a general or reliable nature, have hitherto been quite ignored by Canadian Legislators, but fortunately, a change seems to have come over the vision of their dream, Dr. Brouse, the member for Prescott, in the Commons of Canada, having succeeded on the 20th of March last, in obtaining the appointment of a Select Committee to enquire into and report on the expediency of asking for legislation on the subject. The results which are summed up in the following report of the Sanitary Committee of the House, was presented on Friday the 7th instant, having been unanimously adopted.

“That your Committee in order to obtain information on the subject have invited suggestions from W. Marsden, M.D. of Quebec, Edward Playter, M.D., editor of the Sanitary Journal, Toronto, and George A. Barynes, M.D., editor of the Public Health Magazine, Montreal, all of whom have given much attention and study to the question of sanitary legislation, and their report to your Committee is submitted herewith. That in the opinion of your Committee no such legislation would be effective that did not contemplate the establishment of a complete system for the collection of sanitary statistics. That at the present time no such information appears to be at the command of the Canadian Government, although it is obvious that to the Federal authority alone the country must look for the collection and compilation of statistics relating to the whole dominion. That the Provinces of Ontario, Quebec, and Nova Scotia, have severally legislated with a view of obtaining returns of vital statistics. That the Canadian Medical Association and the Ontario Medical Council have urged respectfully upon the attention of the public the vast importance of such statistics. That in Great Britain, France, the United States and other countries, the most satisfactory results have ensued from the enforcement of sanitary reforms, founded upon accurate statistical information. That a very large reduction in the death rate has been directly traceable to energetic sanitary means in Calcutta, London and other great centres of population, the decrease having been nearly 50 per cent in the case of the two cities above mentioned. That high

*American Cyclopædia, verb : Statistics.

authorities give a percentage of one-third as the proportion of deaths preventable by due regard for sanitary considerations. That having regard to the necessity of preserving and increasing the population of a new and largely unoccupied country, and measures tending to that end should be regarded as a first necessity. That the benefits derivable from immigration have been at times greatly curtailed by the deadly ravage of epidemic diseases among emigrants on their voyages, or recently landed on our shores, and by them communicated to the population generally. That it is the imperative duty of the Government to secure such information as will enable them on all occasions to grapple most readily and promptly with the importation of such diseases. That as the duty of enacting local sanitary legislation properly devolves upon the Provincial Legislatures, and as the Provincial Governments are in certain instances before mentioned specially charged with the duty of collecting vital statistics, it is desirable that the dominion government should secure for tabulation and arrangement all the information of such a nature obtained by the local authorities. That in any province where no system of registration is in force, the officers of the Federal Government should be directed to make a report from time to time of such matters as may bear upon the sanitary condition of the people. That it would also be desirable to obtain from competent sources information as to the influence on the public health in all sections of the dominion, of climate, soil and meteorological changes. That by the sanitary statistics of other countries being carefully compiled and tabulated for the purposes of comparison with those of the dominion, the Federal or Provincial legislatures should be encouraged to take such steps from time to time, as would be a guide to the public health, and place the whole or certain parts of the dominion in a favourable light in that respect before the world."

Did time and space permit, I could adduce facts on this subject that would be deemed incredible by the uninitiated, and especially in relation to "preventable" diseases.

Dr. John Simon, Chief Medical Officer of the Privy Council of Great Britain, in his preface to a volume of reports, made by the government inspectors, upon several epidemics, which had occurred in various parts of England, under the head of "Filth Diseases and their Prevention," says:—"The deaths which we in each year register, in this country (now about half a million a year) are fully one hundred and twenty-five thousand more numerous than they would be, if existing knowledge of the chief causes of disease, as affecting masses of the population were reasonably well applied throughout

England, and this is I believe the common conviction of persons who have studied the subject."

"Among the foremost causes that affect the public health in England, two gigantic causes stand conspicuous. First, the omission (whether through neglect or want of skill) to make due removal of refuse-matters, solid and liquid, from inhabited places; and secondly, the license which is permitted to cases of dangerous infectious disease to scatter abroad the seeds of their infection." The foregoing practical remarks apply with equal force to this Dominion, and shew the absolute necessity for sanitary legislation based on statistics.

I will conclude with a letter from Dr. Draper, examiner of the returns of births, deaths, and marriages, for the State of Massachusetts; on account of its important bearing on the subject of "preventable" diseases. Dr. Draper has appended a table to his letter, detailing all cases of mortality in Massachusetts, from 1869 to 1873 inclusive, by which it appears, that out of 156,289 deaths from all causes; 78,241 persons of all ages, died of "zymotic and acute pulmonary diseases, and phthisis," being over 50 per cent of deaths from "PREVENTABLE" diseases. What a subject for the consideration of the statesman and philanthropist!—

BOSTON, SEP. 25TH, 1875.

MY DEAR SIR,—Your note of the 23rd requesting the "number of deaths from preventable diseases which have occurred in Massachusetts within the past few years, and the number of persons in this State cut down annually by such diseases before they are five years old" is before me. I find some difficulty in determining the exact limitations of the term "preventable," but I presume that sanitarians would generally agree that it might be applied to the zymotic diseases at least. The deaths from affections of this class in Massachusetts during the five years 1869 to 1873 inclusive, (the statistics of later years have not been received) amount to nearly forty-one thousand, an annual average of more than eight thousand. If we add to this the mortality from acute pulmonary diseases, (bronchitis, plury, pneumonia,) the total for the five years will be over fifty-two thousand. If again we add the deaths from phthisis, as Mr. Simon intimates that we may in our account of the controllable filth diseases, the number becomes quite enormous—seventy-eight thousand.

The deaths of children under five years old during the period above mentioned were as follows: From zymotic diseases, twenty-six thousand; from acute pulmonary diseases, four thousand five hundred; from phthisis, one thousand seven hundred—an aggregate of over thirty-two thousand.

The total number of death in Massachusetts during the five years, from all causes was 156,289 ; of that number the deaths from zymotic diseases comprise twenty-six per cent. ; those from acute pulmonary diseases were seven per cent. ; and those from phthisis seventeen per cent. So that if we include all these among the " preventable " diseases, the deaths from these causes represent one-half the actual mortality.

I am Sir, yours respectfully,

F. W. DRAPER.

To Henry I. Bowditch, M.D.,
Chairman State Board of Health, Mass.

Dr. Brouse has earned for himself the lasting gratitude of the whole Dominion by his benevolent efforts, which must culminate sooner or later in a complete system of sanitary statistics, and public hygiene, that will result in an incalculable saving of life, health, and wealth. Who that has shed tears over a valued friend or relative during any of the numerous unchecked periodical pestilential visitations of small pox, cholera, ship fever, etc., with which this country has been visited in times past, does not feel to the fullest extent the truth in the trite old saying, that there is more virtue in an ounce of prevention than in a pound of cure.

THE PROPOSED CITY TRUNK SEWER.

BY JOSEPH WORKMAN, M.D.

In my third communication, which appeared in the March number of the *SANITARY JOURNAL*, I drew attention to the urgent requirement of the construction, along the City front, of a receiving trunk sewer, for the purpose of carrying away, to a sufficient distance, before discharge into the lake, all the foul fluids discharged from houses and premises within the city. It has been with very high gratification that I have, since writing the above article, seen the discussion which took place in the City Council, on this subject, as it proves that our civic authorities have not been unmindful of the obligation resting upon them as guardians of the public health. Instead of severe animadversion on their past supineness in this relation, it should be the part of every intelligent citizen to thank them for the rational and dispassionate manner in which they have entertained the project submitted to them by their able and energetic engineer, and it is most earnestly to be hoped that the good sense and enlightened public spirit which have characterized the inception of

so vitally important an undertaking, will continue to govern their entire procedure, until the final consummation of the greatest sanitary reform which ever has been, or ever can be undertaken in the City of Toronto,—a reform the value of which it is impossible to express in *any number of dollars*, but which, I am convinced, will, before many years, become manifest, in the improved general health of the population.

Not a year passes in which hundreds of our citizens old and young, poor and rich, are not prematurely cut off by diseases which derive their fatality from foul air and impure water. What family, visited by an exterminating diphtheria, malignant scarlatina, life-crushing typhoid fever, or any other of those numerous diseases which now baffle the best medical skill, and clothe so large a proportion of our citizens in the garb of mourning, would hesitate to declare its readiness to submit to even a *large* increase of taxation, to be secured against future deadly visitations? Let not our *City Fathers* hesitate in this undertaking to vindicate their claim to the honourable title. Let them dread no odium ever likely to arise, or ignorantly to be conjured up, from appeals to the avarice, or the apathy, of their constituents. They will be eminently secure in the approbation, not merely of the entire intelligent portion of the community, but of the mass of the electors. But let them do their work thoroughly. Let no penny wise and pound foolish policy lead them into a deluding economy, which, in the long run, would prove the most costly and unsatisfactory of all policies.

I am indebted to the politeness of *Mr. Shanley*, the city engineer, for an inspection of his plan of the proposed trunk sewer, and for his lucid explanations of the whole work. It is my conviction that *Mr. Shanley* has thoroughly mastered his grand project, and that if it is carried out in its full details, it will, for all time to come, be an enduring honor to him and to our civic representatives who shall have the courage and the good sense to carry out the work.

It is proposed to commence the sewer in the western part of the city, at the garrison creek, the water of which will, on completion, be turned into it, and will, through the greater parts of every year give a valuable flushing current. As all the other creeks which formerly ran through the city have been intercepted by existing street-sewers, wherever crossed by them, there will be a sufficient scouring volume of water to keep the trunk sewer clear of all accumulation of solid matter. The aggregate fall of the sewer bottom, from the garrison creek to its termination at the Don, will be about 13 feet, or at the rate of $4\frac{1}{2}$ feet to the mile, a grade quite sufficient to ensure a steady and efficient current.

Your readers will not have forgotten that in my last communication, I said that to empty the contents of the trunk sewer into the Don, would be but to perpetuate the nuisance now existing. Mr. Shanley's plan, by including the turning of the river into a new channel, to be cut in solid ground to the eastward, and closing up its present entrance, provides against the evil above instanced.

It is to be hoped the new cutting will be carried to a sufficient length to prevent exhalation from its liberated contents being wafted by favoring winds back upon the city. If the new cut debouches into the swamp, this untoward result will be inevitable. It should empty into the open Lake.

Some members of the city Council, actuated no doubt by economic motives, and a laudable desire to contribute to the agricultural prosperity of the adjacent country, have suggested the utilization of the sewage, by conversion into fertilizing manure. If this end can be attained without detriment to the paramount sanitary purpose in view, there might be no objection to a fair trial being given to the experiment; but from information which I several years ago received from some large public institutions in the old country, where the process was carried into effect, I should regard its introduction here as a very unadvisable step; should it, indeed, be attempted within any moderate distance, we should soon discover that we had made matters worse than they are at present, for the sewage delivered into our Bay, and there becoming diluted by admixture with cool water, is much less harmful than it would be in large detaining reservoirs, which in warm weather would certainly give off copious volumes of pestilent gases. If the process of conversion should be entertained, the works should not be located nearer the city than four miles. But it is my belief that the value of large towns' sewage as a manure, is very much overrated. The advocates of the dry-earth closet system, have pointed out, with much force, the great desirability of capturing animal *excreta* immediately on evacuation, for they speedily part with those elements which constitute their chief value as fertilizers; and when discharged into the common sewers, and there commingled with large quantities of water, they undergo a dilution, and chemical changes, which render them almost valueless to the agriculturalist. Certainly the sewage of Toronto, once cast into the stream of the Don, and conducted to a safe distance eastward, would require a huge eliminative process to separate from the dilute mass its useful fertilizing portion. That the process must not be dreamed of at any point before escape into the Don, must be palpable to every person possessing the smallest measure of common sense.

No mere secondary or subsidiary consideration should be allowed to retard, or imperil, the grand purpose in view. That purpose is the improvement and future security of the health of the residents of the city. If Mr. Shanley be permitted, and honorably encouraged, to carry out in its full details, his plan of trunk sewerage, every member of the medical profession, and every intelligent member of society, will regard him and the gentlemen under whom he acts, as public benefactors. Money should be no consideration. In what scales shall we test the value of money against that of the general health? Should the latter be threatened with kicking of the beam, fling in a score or two of death's heads and cross-bones, and then mark how the footing of the account stands.

AN ATTEMPT TO SHOW THAT THE WALLS AND FLOORING OF ORDINARY HOSPITALS ARE LARGELY CONCERNED IN THE PRODUCTION OF THOSE SEPTIC POISONS WHICH GIVE RISE TO PYÆMIA, ERYSIPELAS, AND PUERPERAL FEVER; WITH SUGGESTIONS FOR REMEDYING THE EVIL.

By JOHN DAY, M.D. Read before the Medical Society of Victoria, Australia, November 5, 1875. Received direct from the Author.

Mr. President and Gentlemen,—The views I have undertaken to bring before you this evening are offered more for discussion than for acceptance as recognised facts. They are based on a discovery of great hygienic value, recently made by Dr. John Dougall, of Glasgow, who has shown most conclusively, that when organic matter undergoes decomposition in the presence of an alkali, the putrefactive process is induced, with its accompanying offensive odour and health-destroying products; and that this takes place much more readily than when organic matter undergoes decomposition in the presence of a neutral substance; but when organic matter undergoes decomposition in the presence of an acid, the fermentative process is induced, accompanied by a not unpleasant mouldy aroma and innocuous products.

I have repeated Dr. Dougall's experiments, and can vouch for the correctness of his results. His paper on the subject was read at the Social Science Congress, Glasgow, and is well worthy of perusal. It may be found in the columns of *Public Health*, May 6th and 15th [and in SANITARY JOURNAL, Vol. I., p. 292; Ed.]

Now, with a knowledge of the fact that alkalies favour the putrefactive process when brought into contact with decomposing organic matter, can we wonder that outbreaks of pyæmia, erysipelas, and puerperal fever, are of such common occurrence in our ordinary hospitals? Alkaline walls, alka-

line ceilings, and alkaline floors — floors rendered alkaline by the soap used in cleansing them; these are dangerous surroundings for patients with open wounds, and for lying-in women, who are incessantly giving off from their bodies large quantities of organic matter of that peculiar kind which Mr. Simon, in an official Sanitary Report, recently issued, has declared to be capable, when undergoing putrefactive decomposition, of generating erysipelas, pyæmia, septicæmia, and puerperal fever.

At one of our meetings last year, I drew your attention to the fact, that in consequence of the great and long-continued prevalence of pyæmia in the surgical wards of the Leipzig Hospital, which is described as a fine stone building, Professor Thiersch decided on abandoning them, and on having wooden sheds erected for surgical purposes on either side of the old building; and I gave you his results for the first year in these wooden sheds. He performed 266 serious bloody operations, and did not lose a case from pyæmia; whilst in the old hospital, from forty to fifty patients died of this disease annually.

At the time, I attributed this marvellous immunity from pyæmia enjoyed by the inmates of the wooden sheds, to the mild but incessant generation of peroxide of hydrogen by the turpentine contained in the wood; but as turpentine always gives an acid reaction, I am now disposed to think that this property must have greatly aided the disinfecting powers of the peroxide, by determining the fermentative, instead of the putrefactive decomposition of the pus-cells and other organic matter given off from the patients. It is worthy of remark that nearly all, if not all, those substances which spontaneously generate peroxide of hydrogen, at the same time acquire an acid reaction; and further, that chemically prepared peroxide of hydrogen cannot be preserved without the addition of a little acid.

All alkalis, on the other hand, destroy peroxide of hydrogen and when added to those substances which spontaneously generate it, prevent its formation. Thus it would seem that acids are the natural allies of peroxide of hydrogen, for they are not only simultaneously generated, but they give it stability, and act in concert with it as deodorisers and disinfectants.

I think the day is not very far distant, when the true value of peroxide of hydrogen, both as a therapeutic agent, and as a disinfectant, will be fully recognized by the profession. As long ago as July 1871, in a paper read before the society, I recommended its use as an external application to the bodies of small-pox patients, for the purpose of preventing the spread

of the disease ; and I based my theory on the remarkable property possessed by pus-cells, of giving increased activity to the peroxide, by transforming a portion of its oxygen into nascent oxygen or ozone. This view has recently been very strongly backed by Dr. W. B. Richardson, in a paper read before the Society of Medical Officers of Health, entitled, "Some New Researches on the Cause and Origin of Fever from the action of the Septinous Poisons." I have not yet seen his paper in full, but the following extract taken from *Public Health*, will show you that his views do not differ from mine regarding the chemical action which takes place when septic poisons and peroxide of hydrogen are brought together : "He found that it was the property of all the septic poisons to liberate oxygen from that solution of oxygen known as peroxide of hydrogen. This fact was illustrated by showing the action of minute portions of pyæmic poison, vaccine, pus, decomposing blood, and other similar bodies. A solution of peroxide containing ten volumes of oxygen was placed in tubes, and was inoculated with the various specimens of septic matter, with the effect in each case of causing a rapid evolution of the oxygen."

Now, although it has not fallen to my lot to be in a position to test the value of my theory for the suppression of small-pox, nor has it, that I am aware of, ever been tried, I have had ample opportunities of applying it to the suppression of scarlet fever, and I will tell you in a few words what have been my results. Since April, 1873, I have attended scarlet fever in thirty-five houses, some of them large schools, and others hotels, and in only three of them have I failed to arrest the spread of the disease.

My plan has been to have the patients freely rubbed from head to foot, three times a day, with ethereal solution of peroxide of hydrogen (erroneously called ozonic ether) and lard in the proportions of one part to eight. The inunctions have been continued for a fortnight or three weeks. When the throat symptoms have been severe, I have prescribed a gargle of ethereal solution of peroxide of hydrogen and water, in the proportions of two drachms to eight ounces, to be used frequently. Every patient made a good recovery, and desquamation of the cuticle very seldom occurred. No internal medicines of any kind were given.

I am aware that I have rather digressed from my subject, but trust the few remarks I have made regarding the power that peroxide of hydrogen seems to possess of destroying the poison-germs of other diseases than those under our consideration, may not appear out of place.

Now comes the important question:—If certain diseases, such as pyæmia, erysipelas, and puerperal fever, are generated in hospitals, can we do anything to mitigate the evil? I think we can, and I will offer you, by way of illustration, the successful results of a method adopted some few years ago for banishing pyæmia from the wards of the Royal Hants Infirmary, Southampton. The disease had prevailed for a long time in this infirmary, and had assumed a very malignant type; when, at the suggestion of Dr. Charles Langstaff, one of the surgeons to the institution, the walls were, in some parts of the building, rubbed smooth and coated with a varnish composed of paraffin and oil of turpentine; and in other parts, they were thoroughly painted, then well rubbed down, and, after receiving a final coat of paint, well varnished. The floors after being carefully planed, were coated with paraffin driven into the boards by means of heat, and then polished with oil of turpentine. The wooden furniture was painted with paraffin dissolved in oil of turpentine. This was all done with the sole object of rendering the various surfaces of the walls the floors and the furniture non-absorbent, and this object was doubtless, in a great measure, attained; and what is better still, that fell disease, pyæmia, was exterminated. I do not, however, think that this grand result was entirely brought about by the mere conversion of absorbent into non-absorbent surfaces in the infirmary wards. The walls no longer presented an alkaline surface, nor did the floors, which previously were rendered alkaline by the use of soap in cleansing them; but instead, as a consequence of the admixture of linseed oil and oil of turpentine with the substances used for rendering them non-absorbent, they acquired an acid reaction, and also the property of continuously acting on the atmospheric oxygen and converting it into peroxide of hydrogen—a substance specially adapted for hospital disinfection, on account of its peculiar property of giving off nascent oxygen, when brought into contact with either pus or blood cells.

Nearly all authorities on hospital hygiene now deprecate the use of soap and water in cleansing the floors. Dr. Parkes says, in speaking of erysipelas as a hospital epidemic, "Moisture of the floors, causing constant great humidity of air, has also been supposed to aid it."

In my opinion, the floors of hospitals may very easily be kept sweet and wholesome, and even permanently disinfectant; but the walls, ceilings, and furniture, and beyond all the atmosphere, are more difficult to manage.

Here is a board which was first brushed over with equal parts of gasoline and boiled linseed oil, to which a little

benzoic acid had been added; and when dry, polished with a thick paste composed of bee's wax and turpentine, with benzoic acid, in the proportion of two drachms to the pound, added. I consider that boards prepared in this way are rendered almost permanently disinfectant. The gasoline, linseed oil, and oil of turpentine, all get embedded in the wood, and generate peroxide of hydrogen; the benzoic acid is added on account of its great power of destroying all the lower forms of organic life; and the wax is of course used for the purpose of combining these substances and affording a polish. This composition gives a decidedly acid reaction. It was for boards thus prepared that I was awarded a first prize at the Inter-colonial Exhibition. So many substances, which might be applied to boards, generate peroxide of hydrogen, that I have no doubt my method could easily be improved on.

For the purpose of rendering the walls and ceilings of hospitals non-alkaline, either of the plans recommended by Dr. Langstaff, and to which I have already alluded, would answer very well; or what perhaps might answer better still, would be to thoroughly coat them over with silicate paint, and then rub them down and varnish them. Very beautiful enamelled ceilings are now being made by the Enamelled Iron Company in Birmingham, which would answer admirably, not only for the ceilings, but I think also for the walls of hospitals.

The furniture of a hospital might easily be rendered disinfectant in a variety of ways. For instance, it might be occasionally brushed over with either gasoline or benzine, in which a little benzoic acid has been dissolved. The smell from these hydrocarbons soon passes off, but their disinfecting properties will remain for a very long time. Or it may be rubbed with any of the ordinary compounds sold as furniture polish, provided they do not contain an alkali. They nearly all contain some ingredients which generate both acids and peroxide of hydrogen, such as oil of turpentine, linseed oil, and resin.

With regard to atmospheric disinfection, either in our hospitals, our public buildings, or our dwelling-houses, common sense tells us that we should turn out the foul air, and let in pure fresh air in its stead; but this alone has been found insufficient for the purification of hospital air, more particularly in the surgical wards, where pus-cells are apt to accumulate, and to give rise, whilst undergoing decomposition, to the most dangerous consequence.

Now if it be true that pus decomposes peroxide of hydrogen, and sets free nascent oxygen, which not only oxidises the pus, but also any other putrescible organic matter which may be present; we may I think rationally conclude, that certain vol-

atile substances, such as gasoline, benzine, and eucalyptus oil, all of which possess the property of generating peroxide of hydrogen, would be found suitable disinfectants for the atmosphere of a hospital.

PRACTICAL NOTES AND EXTRACTS ON HYGIENE.

BY THE EDITOR.

(Continued.)

THE AIR—VENTILATION—WARMING.

The various methods of warming the air in houses, involve a subject intimately connected with that of ventilation; especially artificial ventilation, treated of in the April number of this JOURNAL. Space will not permit the full discussion here of the advantages and disadvantages of the different methods of warming, but some practical hints concerning important points will be of use, in concluding the subject of ventilation.

The *open fire-place* constitutes a perfect method of extraction. But inlets should in all cases be provided, and high up in the wall, or upon what is now called the Tobin system, previously referred to. This method of warming involves an enormous loss of heat and waste of fuel. It is said, that in ordinary grates, etc., nine-tenths of the heat produced passes up the chimney. Open fire-places have been devised with powerful reflectors at the back, and others with an air-chamber behind, in which fresh air is warmed before it enters the room, which greatly economize heat; and it is surprising such do not come into more general use. The great want in this mode of warming, appears to be proper inlets. These might in many cases be in the halls, where the air might be warmed, and allowed to enter the rooms through openings over the doors. A small fire in a grate would then suffice, and fair ventilation would be obtained.

To the *common stove*, so generally used in this country, the greatest objection is, the absolute want of means of ventilation, and special inlets and outlets must in all cases be provided. Then, their too often over-heated surfaces dry the air to a very unwholesome extent, and char flying particles in it. Iron at a red heat abstracts oxygen from the contiguous air, and renders it quite unfit for the purposes of respiration. Polished sheet-iron has a less injurious effect upon air than has cast-iron at a like temperature; but unless it be lined with cast-iron, it is liable to be over-heated. With proper inlets and outlets, a large polished surface for *warming* the air, and provision (open pans or wet cloths) for supplying moisture, common stoves would be almost unobjectionable.

This last provision is very important; and it may here be observed, that instruments for testing the humidity of the air in our rooms are as essential as thermometers for guiding us as regards the temperature.

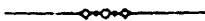
The use of *steam-pipes* in rooms likewise requires special inlets and outlets. This plan, which is adopted in many of our public buildings, is cleanly and economical, but provides no means whatever for ventilation.

Furnaces for warming air before it passes into the rooms, when properly constructed and managed, are perhaps less objectionable and more economical than any other method. If the air is taken from a pure source, warmed to a proper temperature for inspiration, in a hot water or steam furnace, and allowed to pass up into the apartments, and warm flues are provided for continuing the upward current, and extracting the expired air with its impurities, the whole system of ventilation and warming seems complete.

In this method, however, the air is usually taken from the surface of the ground, often from an impure source, and warmed in dank, unwholesome basements, while no proper outlets are provided. The air should be taken from a few feet at least above ground. It might be strained or filtered before passing into the furnace; and this, with all the air-pipes, should be kept scrupulously clean, and moisture be provided if necessary.

In hot weather, the same apparatus, with some little modification, might be so arranged that the apartments could be supplied with air cooled in it to a certain degree by refrigerators.

The *temperature* of the air in rooms should not usually exceed 65° Fahr. It is better to wear extra clothing than to breathe too warm an atmosphere.



WHAT WE MEAN BY PUBLIC HEALTH.

[From "Public Health," London, England.]

The two opposite terms, health, and disease, are often taken in a sense much too narrow. Health, besides meaning freedom from sickness, means welfare of mind, fortitude under distress, hope under misfortune: it means strength of spirit as well as soundness of body. Disease, besides meaning bodily ailment or sickness, means disease, distress of mind, weakness of spirit.

Public health cannot be regarded as a subject which concerns doctors only; it concerns every person capable of under-

standing his or her true position in the world, and the true relations of persons to each other. There can be no public health where persons assume false relations to each other. Public health means the prevention of disease of all kinds and the promotion of true relations among men. It recognises conscience as a law to be obeyed. It prevents disease by removing its causes. There cannot, indeed, be public health unless each person is conscious of the duty of doing his or her part towards it. It should be understood by everyone, high and low, that to help to maintain public health is everyone's duty alike, and what everyone can do is to see to the cleanliness of the house in which one lives. There are some things necessary to the public health individuals cannot of themselves do, and these properly belong to the sanitary authority, such as the removal of dirt from ground which is occupied by the public roads and other public places; the removal (in towns) of the refuse from the back premises of houses; the construction of drains and sewers, and other things of a public nature. But there are also many small things which everyone alike can do, as a part of the regular household duties; such as to remove the dirt from the floors and walls of houses, and from the back premises of houses; to remove the dirt from one's skin which is caused by the perspiration of the body and which is hidden by the clothes; and it is even more necessary to attend to the wants of children in these respects than to our own. The one thing which we should always keep in view is that we are responsible for the state and condition of those who come after us.

It is not easy to maintain public health; on the contrary, it is difficult; but Englishmen have not usually allowed difficulties to prevent the accomplishment of their object, hitherto, in other things. The reason of its being difficult to maintain public health would seem to be that, in order to do it, man's natural propensities have to be encountered, and these have proved stronger than the means adopted to encounter and correct them.

In a state where each individual might be independent of others, he would have the right to please himself in what he should do, and if he should please to live in dirt and contract disease, he might claim his right to do so; for in such a state there would be no public; there would be a segregation of individuals each acting independently. But that, it need hardly be said, is not the state in which we live. The other state might be as much civilised as this, or much more so, but the forms of the civilisation are essentially different. Here we have a public; we have a society, each member of which is

intimately dependent upon some other or upon the whole, and if a member suffers, he does not suffer alone.

Nothing will or can be properly done in maintaining public health unless we all first agree upon this principle, viz., that everyone has an absolute right to have those things without which he cannot live healthily, and which he cannot procure for himself. It is the duty of the sanitary authority to procure those things which are necessary for public health, and which individuals cannot in the country procure for themselves. The responsibility of using the means provided, by which a man's family may live healthily, must lie upon his own conscience.

He who would argue that an individual in a community like ours should be left to his own devices in procuring the necessities of healthy life, and that if he cannot procure them he shall not have them, would seem to be of a persistently evil mind. The only man who could object would be he who might be required to contribute to the welfare of his fellow-man, but any such argument against providing all persons with the means of living healthily, and which they cannot procure for themselves, could not stand, even upon the ground of self-interest, for if any person is made ill by one of those infectious diseases which are so frequent where people cannot live healthily, his neighbours may suffer by means of infection.

To maintain public health the natural propensities must be held under intelligent control. With all our civilisation we retain a remnant—if no more—of our original barbarism, the ruling principle of which is that each man should act for himself, without regulation or intelligent control, or conscientious regard for others, or for one's own interest through the action and with the help of others. To compare small things with great, we may say that of two boats' crews, one civilised and the other savage, and both cut adrift and left to the operations of nature, the difference between them would be that one would be wholly saved and the other wholly lost, for the individuals of the one crew would help each other, each for his own sake, the result being the salvation of all; while those of the other crew would each help himself at the expense of another, until the strongest one would be left, and he would perish for want of the help he had destroyed. Thus, admitting that self-preservation is the first law of nature, it would seem that it is more truly accomplished by helping each other than by each acting independently of others.

A very important thing to be remembered is that we all have a common origin, and become different only by accidental circumstances. Thus it comes about that wealth is accumu-

lated in families. Refinement of person then sets in by reason of the choice of beauty which persons are able to make, and the refined "blood" is confined to a few. Without complicating the question with considerations whether these are rich or not, we shall call them the High, in contradistinction to persons of more common blood, whom we shall call the Low. The question is, can the few high maintain their high position in presence of the many low? Our answer is, No; the vulgar many pull them down. This occurs in various ways, as, for instance, by mere example, creating a hopelessness in the educated man when he sees the misery of the uneducated multitude. (By education we mean well brought up, not limiting the term to school education, but including the proper care and attention of parents and others having authority over children.)

Is the form or composition of the infant of the low different from that of the high? Yes—by a long course of degradation, through many generations, it is made so: and, if a hundred be degraded, and one improved, how is the law fulfilled—the inexorable law? When the one comes to look upon the state of the hundred, he is made hopeless; and so, by mere example, he is pulled down. The finer sort of man is pulled down also by anger and contempt. He suffers the passion of anger when in contact with ignorance, and crime, and dirt. He does not, however, by that effect any improvement, but is met by a spirit of resistance. See the low-born man driving a slow waggon which someone behind him wishes to pass. How he turns his leary face and expresses his sense of his power over the other; and how angrily does the other remonstrate when he does pass him. The altercation begins in anger, and ends in contempt, while the man is improved not at all thereby. * * That we should live a life of warfare with savage animals, and keep them down, is our allotted task, and we are equal to it; but as long as we prey upon each other, can the status of any be maintained? No—the high are pulled down, while the low are in no way elevated.

How, then, to improve this wretched state of things? By authority. Begin at the mother's knee, and induce the father to provide all that is necessary to the healthy life of the child. With provision for its stomach, let the parents make, *pari passu*, the air it breathes such as will not deteriorate its blood. but help it to grow healthily; or else do these things by authority. An Englishman's house is his castle; well, do not intrude on his privacy if he will keep his castle fit for the habitation of his children, but let it be somehow made fit. Here is a practicable beginning.

The intelligence of the high must be brought to the help of the low. Can the Legislature not accomplish this? Then the Church must do it. But in these secular days, the Legislature takes precedence of the Church. Let the State, then, see to these things. Shall the Nation prosper in which legislation at the same time weakens the Church and neglects the poor—the multitude?

Does the production of a few fine fellows at the Universities compensate for the neglect of the many? Why, these few do not recognize these many as in any way belonging to them. They live in a fool's paradise; the many are pulling them down. Let these few abate something of their hopes until the average status of their brethren has been raised so as to be recognisable, and then make a fresh start with better success. We rebut, in anticipation, the objection which may be raised, that this would tend to establish a dreary level of humanity, and that we are better with our confusion. The argument goes to this—that at present the few high are overmatched by the many low; and that the attempt of a few to surpass their brethren, and pass into a world which the others are not fitted for, must fail; and that the only way to reach the goal is for all to go together. When the Captain leads his men, he does not detach himself wholly from them; but, while leading them, is of them.

ON SLEEP.

[From Hufeland's Art of Prolonging Life.]

It is certainly not the same, whether one sleeps seven hours by day or by night; and two hours' sound sleep before midnight are of more benefit to the body than four hours in the day. My reasons are as follows: That period of twenty-four hours, formed by the regular revolution of our earth, in which all its inhabitants partake, is particularly distinguished in the physical economy of man. This regular period is apparent in all diseases; and all the other small periods, so wonderful in our physical history, are by it in reality determined. It is, as it were, the unity of our natural chronology. Now, it is observed, that the more the end of these periods coincides with the conclusion of the day, the more is the pulsation accelerated: and a feverish state is produced, or the so-called evening fever, to which every man is subject. The accession of new chyle to the blood, may, in all probability, contribute something towards this fever, though it is not the only cause; for

we find it in sick people who have neither eat nor drunk. It is more owing, without doubt, to the absence of the sun, and to that revolution in the atmosphere which is connected with it. This evening fever is the reason why nervous people find themselves more fit for labor at night than during the day. To become active, they must first have an artificial stimulus, and the evening fever supplies the place of wine. But, one may easily perceive that this is an unnatural state, and the consequences are the same as those of every simple fever: lassitude, sleep, and a crisis by the perspiration which takes place during that sleep. It may with propriety therefore be said, that all men every night have a critical perspiration, more perceptible in some, and less so in others, by which whatever useless or pernicious particles have been imbibed by our bodies, or created in them, during the day, are secreted and removed. This daily crisis, necessary to every man, is particularly requisite for his support, and the proper period of it is when the fever has attained to its highest degree, that is, the period when the sun is in the nadir, consequently midnight. What do those, then, who disobey this voice of Nature which calls for rest at the above period, and who employ this fever, which should be the means of secreting and purifying our juices to enable them to increase their activity and exertion? By neglecting the critical period, they destroy the whole crisis of so much importance: and, though they go to bed towards morning, cannot certainly obtain, on that account, the full benefit of sleep, as the critical period is past. They will never have a perfect, but an imperfect crisis; and what that means is well known to physicians. Their bodies also will never be completely purified. How clearly is this proved by the infirmities, rheumatic pains, and swollen feet, the unavoidable consequences of such lucubration.

HEALTH AND LONGEVITY.—Dr. Reginald Southey, in a recent lecture on "Hygiene," reported in the *Lancet*, has the following observations on health:—Health and longevity are not synonymous; neither are health and great muscularity. The most muscular men, great prize-fighters, men who could fell an ox with their fists, have been known to be always ailing, and complaining about themselves. The state of perfect training, regarded by those who know little of it, as a condition of most perfect health, is rather one of morbid imminence. Longevity, like height, is a race attribute, but it does not signify health. The three oldest people I ever knew, women who reached respectively eighty-nine, ninety-eight, and a hundred, were valetudinarians, and had been so nearly all their lives.—*N. Y. Med. Jour.*

THE COMMUNICATION OF TUBERCLE IN FOOD.—The *Edinburgh Medical Journal* states that Professor Gerlach, of Berlin, details an elaborate experimental research on the question, whether tubercular matter, or the flesh of tubercular animals, can communicate or excite tubercular disease if taken as food? The conclusions arrived at by Prof. Gerlach may be summarized as follows:—1. There is a specific virulent material in tubercle and many of the symptoms of tubercular disease are due to the absorption of this virus. 2. This virus exists in tubercle in all its stages, but apparently in greater intensity in cheesy masses. It is found in recently formed tubercle, and in miliary tubercle. 3. The infection begins first in the mucous membrane of the mouth, and if the tubercular matter be in contact a sufficient length of time with the mucous membrane of the alimentary canal, it may communicate the disease to the whole lymphatic system. 4. While tubercular disease has special characters in different animals, all tubercular matter, when introduced into the alimentary canal from one species to another, is more or less virulent. 5. The tubercular matter of birds, especially that of the common hen, is very virulent, and is identical in its action with that of mammalia. 6. The fibrous tubercle of horses, without a trace of cheesy formation, is just as infectious as the miliary tubercle of cattle. 7. The flesh of tubercular animals is also infectious, though in a much less degree than tubercle itself. 8. Tubercular material cooked for a quarter to half an hour is still infectious, though in a much less degree than that not cooked. 9. The effects of poisoning by tubercular matter taken into the alimentary canal are irritation of the mucous membrane both of the alimentary and respiratory tracts, enlargement and tenderness of the lymphatic glands, enlargement of the bronchial glands, and the formation of tubercle in the lungs and other organs.—*Med. and Surg. Reporter.*

“THE STAFF OF LIFE.”—Just think a moment of how the miller defrauds us in making our flour. He takes the fine plump wheat which is produced by the rich soil of our western prairies, crushes it between two stones, which are heated so intensely by the friction that the life of the grain is destroyed, and then puts it through a process of “bolting,” by which he sorts out the best, richest, most palatable, and most nutritious portion of the grain. The poor residue, which is almost worthless for food—will starve a dog, in fact—being almost nothing but starch, he puts up in barrels, and labels XXX, superfine white flour. The other portion is fed to the miller’s hogs. Is it any wonder that the miller’s hogs are fat?

Is it strange that so many little boys and girls who are fed on fine-flour bread are poor, and lean, and sickly ?

The outer portion of the grain contains the most nutritious elements of the whole kernel. Just underneath the horny shell which forms the outside of the grain is found the portion which contributes to the building up of brain, bone and muscle. The whiter portion which forms the center is of the very slightest nutritive value. It will make good paste, or good starch for clothing; but it will not make either good brains, strong muscles, or solid bones. The early decay of the teeth of Americans, and the disease known as rickets, are attributed, by many eminent physicians to the use of fine-flour bread, which does not contain a sufficient amount of the mineral element to nourish such tissues as the teeth and bones.—*Health Reformer*.

THE PARASITIC THEORY OF DISEASE.—The editor of the *Medical Press and Circular* says, on this much debated subject:—The idea that minute atmospheric germs were the cause of diseases, as well as putrefactive changes, is no new theory; it originated with Kircher and the pathologist of the seventeenth century. Since their time it has been frequently revived, and hundreds of more carefully conducted experiments than those made in their days have certainly done very little toward confirming it in the minds of the profession. The late Professor Hughes Bennett and his able assistants conclusively proved the fallacy of the theory; in fact, their numerous experiments indicate that the production of infusorial life depends, for the most part, upon temperature, chemical constitution, density, and other equally important physical properties of the air, rather than on living floating organisms.—*Med. and Surg. Reporter*.

DISEASE GERMS.—Mothers know too well what is meant by the word "thrush," or "screw," that mouth malady too common with little children. To the profession it is known as an aphthous ulceration of the tongue, aphtha being the name of the disease, and signifying a burning. The tongue "is swollen, tender, and furred." There are excoriated spots, sometimes true ulcers, varying in size, perhaps, from that of a pin's head to that of a half pea, and these are severally capped with a white curd-like mass. However diminutive these pustules may be, they are in truth hammocks of tiny plants for each one contains many thousands of parasitic fungi, often called *torula*. These fungi attach themselves to the mucous membrane, and burrow among the epithelial cells. They are "composed of threads matted together like felt,"

whose basal ends intertwine among the epithelia, like hair in the prepared mortar of the plasterer. At a recent meeting of the Academy of Natural Sciences, Professor Leidy exhibited a mouse with little curdy patches on its ears, face and nose. Mr. Indifference would have passed the matter by as a stupid trifle; and a spurt of insapience escaped one of the wise men, who wished to know "what the muss was." However, little *Mus musculus* was regarded as an abnormal case, and a proper subject of scientific inquiry. The query was now, "What ailed the little fellow, and where had he been?" At this juncture the microscope spoke out in meeting, declaring with authority that the white spots were colonies of a parasitic fungus; and, strange to tell, they were as much like the thrush fungus as one pea is like its fellow in the same pod. The truth told, Mousie was captured in the children's department of Blockley Hospital, where he had picked up the crumbs that had fallen from the mouth of a child patient. The diagnosis now seemed natural and direct. Mousie had been and got it—namely, the thrush—and, strange to say, he had got it bad, for it was on his ears and nose and face. Soon, in all probability, it would have entered the mouth, even if it had not already. A minute portion of one of these white spots was subjected by skilled hands to a lens of very high power and lo! there were the morbid parasites, tiny sporular bodies, some single, some double, and others "in chains of a dozen or more." The fungus was pronounced to be a *torula* or *oidium*, like that found in the disease known as thrush or aphtha. A drawing of it would simply be like a number of elongated beads strung together. But how diminutive these beads or cells were! A single one was the $\frac{1}{850}$ of a line in length, that is, it would take 7,800 of them in line to make an inch.—Prof. Lockwood, in *Harper's Magazine for May*.

MILK AS A VEHICLE OF CONTAGION.—In a recent pamphlet by Mr. A. H. Smee, an English sanitarian, the author reaches the conclusion that there is undoubted evidence to show that milk can be the vehicle of contagion: By direct communication of the contagion, either by the water used for the purposes of adulteration, or by the vessels in which it is stored being cleansed with impure water. By the absorption of the contagion by the exposure of milk to deleterious gasses. That in extreme instances power to communicate disease is produced in the milk itself, probably from an altered secretion of diseased animals.—*Ibid.*

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CHANGING UNDERCLOTHING.

We would give a word of caution regarding change of clothing as spring advances and summer approaches, especially underclothing. The first real warm day often induces persons to throw off their thick clothing and put on garments suitable only for warm weather. Of course, a change must be made; but it ought to be done gradually and cautiously. The change is always attended with danger, particularly with those liable to pulmonary affections, throat diseases, rheumatism, and neuralgia. In fact, a large number suffer yearly from colds in some form from incautious change of clothing in the spring. And there is reason to believe that not a few have by this means laid the foundation of fatal lung disease.

The weather in Canada in the spring is very uncertain. A warm, even hot forenoon may be followed by a chilly afternoon, or a raw chilly morning may be succeeded by genial summer weather in the latter part of the day. Our broad northern lakes, from the surface of which cold mist continue to rise, as well as the masses of ice keep that region very cold until midsummer. So that when the wind bears down upon the southern portion, the atmosphere becomes suddenly cold. Hence the uncertainty of the temperature during the spring and early summer.

A change of clothing can be effected without much if any danger. Outer garments should be put aside first. When an article of clothing is discontinued the others ought to be for a time somewhat warmer. The underclothing should be changed last. But there are but few who can with safety and comfort dispense with woolen shirts and even drawers during the summer; at the same time we believe a large majority of

Canadians do not wear under garments of wool during the summer. When a really warm day arrives flannel is at first, to many, very uncomfortable; but the wearer will generally find that it is quite agreeable as night approaches; and after a few days endurance, almost any one will become accustomed to it, and therefore rarely find it a cause of discomfort. And in the warmest weather the one who wears woollen underclothing will suffer no more than those who wear only cotton or linen. But the woollens need not be oppressively thick. No one should change his underclothing during the day. Thoughtless persons have been known when in a state of perspiration from exercise to throw off their flannels; a proceeding highly dangerous. Careful persons will only change one garment of underclothing at a time. The woollen drawers may be laid aside to-day, and the shirt to-morrow or next day. One having made a change it is imprudent in consequence of a cold day to resume the flannels. Better wear extra outer clothing.

The remarks we have made apply to the healthy. The unhealthy, the feeble, the aged, and the young, should with more care make changes in their clothing, and they ought always to wear flannel next to the skin. Although the circumstances of the male and the female are different, and some modification may be necessary with respect to each, yet the principles laid down are applicable equally to both. Again the course to pursue will be modified by the occupation of the person, as well as other circumstances.

KEEPING MILK PURE.

As the warm season approaches and food-stuffs are more likely to undergo changes, a few remarks on the above subject may be useful. The peculiar properties of milk, those of attracting and absorbing impure matters, are well known. The practice has been resorted to of placing an open dish of new milk in a larder in order to preserve flesh meat from approaching taint. It is said to answer that purpose, but the milk after a few hours becomes so bad that no animal even will touch it. It appears probable that many of the cases of sick-

ness, especially colic, diarrhoea, and vomiting, which have been caused by the use of milk during the past year in Great Britain, and which have attracted much attention from medical journals, have been owing to rapid chemical changes taking place in the milk on account of the above peculiar property, rather than to any specific poison. In one outbreak of typhoid fever following the use of milk from a certain dairy, it was found on investigation that the milk had been kept standing in a room immediately adjoining, and communicating directly by a door, with one in which lay a patient ill with typhoid. There was no certainty that the milk had absorbed the poison; it may have found its way into the milk by means of foul water. In most cities, we believe in Toronto, milk is kept for sale in groceries, near to fish, cheese, soap, etc., where it is impossible for it to remain for even a few hours in a perfectly pure state.

Milk, therefore, should never be allowed to stand for even a short time in the vicinity of foods or substances which emit odors, or damp substances which readily change.

Again, aside from this, milk is prone to rapid decomposition when kept at a high temperature. The effects of low temperature on milk have recently been carefully examined by M. Tisserand, who has communicated his observations to the Academie des Sciences, Paris. He has found that the nearer the temperature of the milk is retained to yet above the freezing-point the more rapid is the collection of cream, the greater is the quantity of cream and amount of butter, and the *better is the quality* of the skimmed milk, the butter and the cheese. We have before in this JOURNAL drawn attention to the fact that in England milk refrigerators are largely used at the best dairy farms for the purpose of *rapidly* cooling the milk after being taken from the cow. Refrigeration, while it neutralizes the objectionable animal odor, it destroys infusoria, arrests the evolution of the living organisms which give rise to fermentation, and delays or prevents the changes which are due to their growth. In the North of Europe it is said the value of cold for this purpose is recognised.

To keep milk then, at its original quality, the most perfect and extreme cleanliness and low temperature are absolutely

indispensable. It is of much importance, even where milk is to be kept only for a few hours, that these points be attended to. With the better class of families to do so would be an easy matter. Ice, so readily obtainable, may be employed to regulate the temperature. With the poorer classes, who more commonly obtain milk from second-hand retailers, it need not be very difficult, if the facts were known to them. As to keeping milk in retail shops, only a system of inspection, so much needed, will ensure its proper preservation.

REGISTRATION OF SICKNESS.

Much discussion is now taking place in Great Britain on the subject of registering cases of contagious diseases, and a very general desire is manifested to have a law passed to enforce such registration. The movement meets with considerable opposition, however, from a few of the selfish order, who it would seem prefer to have the germs of small-pox and the like scattered among their fellow creatures, rather than have the public aware they had been visited by a contagious disease. It is desired to "provide for the communication without delay to the medical officer of health of every case of small-pox, scarlet fever, typhus, or typhoid occurring within his district; the duty of making such communication to be made compulsory upon the occupier of the house in which the infected person lies; the medical man in attendance, if any, being further bound to report the case, through the occupier, to the medical officer of health; provision to be made for remunerating the practitioner for preparing such a return."

No more important matter than this could engage the attention of Sanitarians in any country, and such a law in Canada is much needed. In depending only on registration of deaths, health-officers are placed at a great disadvantage. Epidemics in cities, especially of small-pox and scarlet fever, may run such a course and become so wide-spread as to be most difficult of suppression;—they are detected when too

late. Information is most desirable and essential on the first occurrence of an outbreak, and compulsory registrations of all cases of infectious disease is the only safe guard by which officers of health would be made cognisant of every case on its first appearance and be enabled to 'surround it with a sanitary cordon,' and thus be in a position to prevent the further extension of the outbreak.

Furthermore, as it is known that the death-rate in a locality does not always by any means bear an approximate ratio to the amount of sickness, registration of the latter is essential in order that health officers may know when and where causes of disease most prevail and when and where preventive measures are most needed.

Any system of sanitary statistics will therefore be incomplete which has not provisions for the registering of cases of disease; especially of zymotic diseases, phthisis, and acute pulmonary diseases.

Annotations.

PUBLIC HEALTH REPORT.—The annual meeting of the Michigan State Board of Health was held at Lansing, April 11th, 1876. The President, Dr. Hitchcock, in an interesting and a lengthy address, treated of some of the achievements of hygiene, and their economic relations to the state. He drew attention to the influence of certain growing trees in preventing miasmatic diseases, especially the eucalyptus globulus of Australia, which is cultivated in Europe, California, and the Southern States, and suggested that in this centennial year it be tried in Michigan.

He urged the election or appointment of an efficient health officer in every city, village, and township in the state.

The Secretary, Dr. Baker, introduced a very important resolution, which was adopted, aiming to do for the prevention of scarlet fever what the board has done for the prevention of drowning; that is, to place before the people in a condensed form the best preventive methods. Among other resolutions, he also introduced the following, which was adopted. That in the opinion of this Board, an enlargement of the means and labor of the Signal Service, will add to its present acknowledged usefulness, and is desirable in the interests of public health in this State.

Communications were read, and referred to appropriate committees, relating to typhoid fever, also to school recesses, to water supposed to cause disease, to the establishment of meteorological stations, etc., and much other valuable work was accomplished.

ORIGIN OF DIPHThERIA.—A prominent physician of New York (*Med. Rec.*) was suddenly taken ill with diphtheria, and was confined to his room for five days. On recovering, and making a careful inspection of his premises, he found that in some unknown way the soil-pipe carrying the waste from the adjoining houses had burst, letting in upon his cellar floor a collection of rotteness and filth that was of the most disgusting kind. It is probable that if each case of diphtheria were carefully investigated, a large number of the so-called idiopathic cases might be traced to some such source. There seems to be no reason why such influences as these described should not in many cases be causes of diphtheria, just as they may often produce typhoid fever, puerperal fever, and erysipelas—an opinion that is beginning to be generally held.

DR. M. T. SADLER, In a report of the sanitary condition of Barnsley, deals with the outbreak of enteric fever which occurred in the town last year. He stated that in all houses where the disease showed itself the drainage was defective, and the cellars usually contained a quantity of foul water. In the quarter where the deaths took place a sewer had burst a few days before the appearance of the fever, setting at liberty a large quantity of offensive matter which had been pent up for some time by the frost.

VIRCHOW shows by statistical tables, from a comparison of the causes and mortality of typhoid fever in Hamburg, Berlin, Prague and Halle, that this disease is most prevalent and the mortality greatest where there is least attention given to drainage and water supply; and that it decreases and reaches its lowest degree of prevalence in proportion to the effectiveness of drainage and purity of the potable water. He fears more the uncleanness of the surface than the underground water.

IN THE EARLY DIAGNOSIS of disease, photography is likely to prove useful. The portrait of a lady taken by photography was observed to be covered with spots, the original of which did not present the slightest trace of them. Shortly after, however, they appeared distinctly enough, and the lady died of small-pox. Photography had thus anticipated sight.

THE PARIS MEDICAL NIGHT SERVICE, mentioned in our April number, seems to be working most satisfactorily.

WHILE DESIRING to draw attention to the interesting and valuable article of Dr. Day, of Australia, in this JOURNAL, we wish to say we do not consider it, by any means, *only* applicable to hospitals. It is very suggestive as regards the purity of dwellings, and especially of bed-rooms and sick-rooms.

THE *Pacific Medical and Surgical Journal* says:—If the views of Dr. Drysdale, as expressed in a debate on alcohol at the Brussels Congress last year be correct, there is involved in the inconsiderate and lavish administration of alcoholic beverages by medical men, a high crime against human life and human morals. At all events, the question can not be too earnestly and rigidly investigated.

IN TESTING ARSENICAL ROOM-PAPERS, Professor Hodges says (*Sanitary Record*) it is merely necessary to place a piece of the suspected paper on a saucer, and to pour over it about half a teaspoonful of the solution of ammonia. If any of the arsenical green be present, the solution in a few seconds will become of a rich blue colour, and if, on placing a bit of lunar caustic (nitrate of silver) about the size of a pea in the solution, a yellow ring or crust of yellow arsenite of silver forms round the caustic, the presence of the poison may be regarded as certain.

SMOKERS AND NON-SMOKERS.—The *Temperance Record* states that with the Blackheath Hockey Club, for the last twelve years, it has been the custom to play twice a year a match between smokers and non-smokers. Any member of the club is allowed to play in the match. The smokers have never once been victorious, and only once has there been a tie, although they have almost always been considerably more numerous than their antagonists, having, indeed, on one occasion been as many as twenty-one against eleven.

THE SANITARY LAW OF THE OLD TESTAMENT.—DR. B. W. RICHARDSON says he has been led to the study of the subject of the vitality of the Jews, and the result of his research has shown that both on the continent and in this country Jews possess higher vitality than the general community by whom they are surrounded. Tracing the causes for this greater longevity, the lecturer said he could not attach too much importance to the sanitary laws that obtained amongst the Jews, instancing those in regard to diet, cleanliness, and abstinence from strong drink. In fact, the Decalogue from beginning to end was one sanitary lesson, teaching them to subdue the passions which tormented the brain and distressed the spirit.

POPULAR LECTURES ON HEALTH.—The Yorkshire Ladies' Council of Education, according to the *Lancet*, appears to be doing a good work amongst the humbler classes in diffusing by means of lectures a knowledge of the laws on which the health and happiness of households so largely depend. The interest awakened on such subjects of discourse as "Preventable Diseases and how to avoid them" and the "Muscular System and the Skin" is stated to have been most encouraging at Leeds, and seems to warrant a hope that the importance of hygiene, and of physiological knowledge in its bearing on social comfort and prosperity, is becoming to some extent recognized by those classes which have hitherto been distinguished by their ignorance and disregard of the most elementary laws of health.

ARSENICAL WALL PAPERS.—Dr. Hodges, County Analyst, Antrim, Ireland, in a late report says: For several years my attention has been directed to the injury to health produced by some of the room-papers in use, especially of those coloured green with arsenical pigments. Several cases of dangerous illness, and of continued ill-health, from the effects of these papers were reported to me since last assizes; and my examination of twenty-one specimens forwarded to me from several localities in the county proved that fourteen of the papers were covered with a compound containing about 50 per cent. of arsenic. *In some of the papers the colours were so loosely fixed as to come off on the slightest friction.* By several countries the sale of these poisonous papers is prohibited by law, and I take the liberty of suggesting that the grand jury would take into consideration the propriety of requesting our county and borough members to attract the attention of government to the serious danger to public health from the sale of papers covered with arsenical colours.

VALUE OF STATISTICS.—Nearly forty years' experience of the civil registration of births, deaths, and marriages, says the *Sanitary Record*, has more than justified the hopes and expectations formed by the British Association, and a few sanguine sanitarians, as to its important bearing upon public health. The success of the measure as the basis of a national system of vital statistics, was scarcely dreamed of by its promoters. From materials at first necessarily imperfect, but continually improving, a series of weekly, quarterly, and annual reports, have been from time to time, during the forty years, published by the Registrar General under the superintendence of Dr. Farr, affording an insight into the varied conditions of life, health, and disease, which, previously to the establish-

ment of civil registration was impossible. Again, the president of the Michigan State Board of Health at the last Annual meeting, April, 11-76 said:—The most available and successful means for the accomplishment of the work of the hygienist is the careful collection and compilation of facts. Reliable vital statistics must of necessity be the basis of the work. He quoted from Buckle, who says, "Statistics, as a branch of knowledge, have already thrown more light upon the study of human nature than all the sciences put together." He urged upon the board most persistent efforts to secure more complete vital statistics from the people of Michigan.

AS PROVING the evil effects of insanitary conditions, if proof be wanting, Mr. T. Mellard Reade, C.E.F.C.S., in a lecture in connection with a Sanitary Association, Liverpool, Eng., showed from the able analysis of Parkes and Sanderson, that the mortality per 1,000 in the best streets was only 10·71, while in others it was 26·61, 45·40, and, in the worst streets, 55·86 per 1,000. Thus, the worst streets possessing a death-rate of in one case more than 4 times and in the other more than 5 times the death rate of the best streets. And, though Nature usually struggles hard to restore the balance, the birth-rate was highest in the best streets. Such figures speak strongly and eloquently for themselves.

A FRENCH ENGINEER has invented a new process of preparing the materials for making bread, which will hereafter be adopted in the French army. By it the grain that would make one hundred and fifteen pounds of bread in the ordinary way will make what is equivalent to one hundred and forty pounds. The unground grain is first steeped in water, after which it is deprived of the outer husk, which contains but four or five per cent. of nutriment.

ON THE SUBJECT OF ALCOHOL IN MEDICINE, the first Section of the Brussels Congress made a report that the only circumstance which establishes the necessity of administering it, and when it cannot be replaced by any other agent, is the certainty of anterior alcohol habits. In these cases alcohol becomes indispensable.

ANOTHER STATE BOARD OF HEALTH.—A letter to the *Sanitarian*, dated April 7, 1876, from Dr. Griffin, Fon du Lac, states that Wisconsin has just passed through her legislature a law creating a State Board of Health. Number of members to be seven; appropriation \$3,000. When will Ontario go and do likewise?

A HEALTH RESORT IN EGYPT.—It is announced that the Messrs. Cooke & Son purpose the establishment of a well-appointed sanitarium just above the first cataract of the Nile. The situation is to be on the right bank of the river, opposite the island of Philæ. The mean temperature during the winter months is said to be about the same as that of England in summer.

FOREIGN HEALTH STATISTICS.—United Kingdom of Great Britain, during four weeks ending March 18th. The mortality from all causes was per 1,000 : In London, 23.25 ; Edinburgh, 24.75 ; Glasgow, 30.25 ; Dublin, 34.75 ; Sheffield, 24.25 ; Birmingham, 23.75 ; Bristol, 24.50 ; Liverpool 31.50 ; Leicester, 18 ; Manchester, 32 ; Nottingham, 26.75. Other foreign cities at most recent dates, per 1,000 ; Paris, 29 ; Rome, 42 ; Vienna, 33 ; Brussels, 23 ; Berlin, 27 ; Hamburg, 26 ; Calcutta, 34 ; Bombay, 43 ; Madras, 41 ; Amsterdam, 30 ; Rotterdam, 28 ; The Hague, 24 ; Christiana, 37 ; Turin, 29 ; Alexandria, 40 ; Copenhagen, 32 ; Munich, 34 ; Naples, 36.

NOTES, QUERIES AND REPLIES.

UNCOMMON GRATITUDE.—It is said of the Sultan that after recovering from a serious indisposition (a carbuncle) not long ago, his first act was to raise his medical attendant to a rank equivalent to that of a General of Division, and to bestow upon him £1,000.

THE LATE DR. PARKES named two modes by which we may attempt to prevent the occurrence of disease, viz : By conforming with the general rules of hygiene, by which the body and mind are brought into a state of more vigorous health ; and secondly, by investigating the causes of diseases which we find actually in operation.

PLINY tells us that in early life he made a public profession that he would agree to forfeit all pretensions to the name of a physician should he ever suffer from sickness or die but of old age. He fulfilled his promise, for he lived upwards of a century, and at last was killed by a fall downstairs.

ARISTOTLE and **PLATO** considered a State badly organised where gymnastic exercises were not instituted. Colleges, called gymnasia, were established everywhere, and superintended by distinguished masters.

INVALID.—To advise you as to *treatment* of disease is not the province of this JOURNAL. Consult a physician of experience and repute.

THE ODOUR OF OZONE is so powerful, that air containing one millionth of it is said to have a decided smell of the gas.

SPECIAL NOTICES.

WITH THIS NUMBER bills will be sent to those who have now been receiving the JOURNAL for many months—some from the commencement—and have not yet paid. The editor earnestly and respectfully requests that there will be a *general* and *favorable* response to the little reminder—that our friends will remit without delay. We are incurring great expense in publishing, and shall be from necessity obliged, very reluctantly of course, to discontinue sending to those long in arrears who do not remit soon. We desire very much to enlarge the JOURNAL at an early day;—whether we can do so or not depends on our friends in this respect. Please think over this and don't procrastinate a day in the little matter,—little to each, but much in the aggregate.

THE EDITOR invites *queries* for insertion on all subjects connected with Public Health, and solicits answers to them from the readers of the JOURNAL. This 'intercommunication' might in this way be made a most valuable department of the magazine.

THE EDITOR desires not to be held responsible for anything which appears in the JOURNAL not from his own pen.

FUTURITIAL.—The next number of the SANITARY JOURNAL will contain a paper on Ozone, and extracts from lectures on "Individual Hygiene" by Dr. Southy, of St. Bartholomew's Hospital, London, and on "Fashion and its Penalties" by Dr. Atlee, of Philadelphia.

THE BATHS.—We have visited the Turkish and Vapor Baths' Establishment, on Queen Street west, and through the kindness of Dr. Diamond, the manager, have had the pleasure of an inspection of the entire establishment. It is complete in every part, conveniently, comfortably, and even elegantly fitted up, and is well ventilated and warmed. We trust that it will receive the patronage to which it is really entitled, as it is an almost indispensable convenience.

SEE THE ADVERTISEMENT of Mr. West, of the Golden Boot, in this JOURNAL, and make a note of it before going shopping in that line.

THE FOLLOWING WORK IS ANNOUNCED: "Micro-Photographs in Histology, Normal and Pathological." By Carl Seiler, M. D., in conjunction with J. Gibbons Hunt, M. D., and Joseph G. Richardson, M. D. The high scientific standing of these medical gentlemen is sufficient guarantee of its value to the profession. It is the only publication of its kind, and is intended to replace the microscope, as far as possible, for those who have neither time nor opportunity to make observations for themselves. It will be issued in monthly numbers: J. H. Coates & Co., Philadelphia, U. S.

THE PURPOSE OF THE SANITARY JOURNAL is to diffuse a knowledge of sanitary science—a knowledge of the causes of diseases and of the means of avoiding or removing these causes; to arouse public attention and the attention of the medical profession to the vast amount of preventable disease prevailing; to advocate Sanitary Legislation; to discuss, in short, all questions pertaining to public health, water supply, ventilation, drainage, food, clothing, bathing, exercise, &c., &c.

COMMENDATORY LETTERS TO THE EDITOR.

The following are copies of, and extracts from, a few of the many letters to the Editor, received from time to time, from medical men and others, regarding the SANITARY JOURNAL, unsolicited, of course, and, with two or three exceptions, the writers being personally quite unknown to the Editor :

TORONTO, December 7th, 1875.

DEAR DR. PLAYTER :— . . . Please send me your receipt for the enclosed two dollars, for your valuable Journal. I wish all in the profession valued it as I do. . . .

Very truly,
JOSEPH WORKMAN, M.D.
(Late Supt. Toronto Lunatic Asylum.)

BOWMANVILLE, June, 1875.

DEAR SIR :—I am much pleased with your Journal . . . I look upon it as one of the most useful periodicals with which I am acquainted, and especially to the medical practitioner, who wishes to keep pace with the advancements of science.

Yours truly,
W. ALLISON, M.D.
(Member Medical Council, Ont.)

GLANFORD, ONT., November 22nd, 1875.

DEAR SIR :—Enclosed you will find \$2, to be applied to SANITARY JOURNAL . . . I think your journal is doing a good work, and that such a magazine was much needed in Ontario. Wishing it every success,

I remain, yours truly,
ALEX. BETHUNE, M.D.
(Member Medical Council, Ontario.)

OAKVILLE, March 18th, 1875.

MY DEAR DOCTOR :—Enclosed please find one dollar for your really valuable Journal. . . . Accept my best wishes for the success of your new enterprise.

Yours faithfully,
D. D. WRIGHT, M.D

DUNDAS, September 10th, 1875.

MY DEAR SIR :—Please receive the enclosed \$2 for the SANITARY JOURNAL. Your moderately-priced monthly contains much that is of interest to the reading public of all classes. . . . Much valuable information as well fitted for the general reader as for the professional student. It ought to receive a large measure of support, and I heartily wish it every success.

I am, my dear sir, yours truly,
JAMES HAMILTON, M.D.,
(Late Member Medical Council, Ont.)

LANSING, MICH., August, 12th, 1875.

DEAR DOCTOR :—I am much pleased with your Journal. . . . I read it with interest, and satisfaction, and sincerely hope its circulation may be increased, believing, as I do, that the interests of public health will be advanced thereby.

Very respectfully,
H. B. BAKER, M.D.
(Sec'y Michigan State Board of Health.)

TORONTO, December 13th, 1875.

Dr. PLAYTER,—Dear Sir :—Enclosed find amount of subscription to the SANITARY JOURNAL. I am much pleased with it, and feel that I cannot say too much in its behalf. . . . I hope the publication will receive the support its merits deserve ; it should be carefully studied by every man, woman and child.

Yours very truly,
DONALD McDONALD.
(Senator Dom. Can.)