

PAGES

MISSING

A wise physician, skill'd our wounds
to heal, is more than armies
to the public weal.
—*Pope.*



GEORGE A. AUDEN,
M.A., M.D., D.P.H. (Cantab.), M.R.C.P. (Lond.)

The
Public Health Journal

State Medicine and Sanitary Review

VOL. II

TORONTO, CANADA, MAY, 1911

No. 5

Special Articles

**SEWAGE DISPOSAL SCHEME
FOR INDEPENDENT HOUSES AND
INSTITUTIONS**

By T. A. STARKEY, M.B. (Lond.), D.P.H., F.R.S.I.

PROFESSOR OF HYGIENE, MCGILL UNIVERSITY, MONTREAL

A general recommendation of any particular sewage scheme, whilst undoubtedly serving a very useful purpose, always strikes me as savoring of the patent medicine style—a sure cure for all ills, no matter what their nature, and to be applied anyhow, inside or outside as may be most convenient. So with a sewage scheme, which by long experience has proved to be very good under certain conditions, but requiring modifications to suit local circumstances and even, in some instances, being entirely unsuitable.

With this proviso, as to its limits of usefulness, the following scheme, where properly installed, gives excellent results, and is a system suitable to most isolated or country houses, the quality of land available being the decisive factor as to whether this particular plant can be put into operation or not.

The question of quality of land may be settled very easily; clay, coarse gravel or

a very rocky soil are not suitable, and, except by actually preparing a distribution bed, positively prohibit the use of this scheme.

The processes involved are the time-honored septic tank, and treatment of the resultant effluent upon land.

Although the processes are generally well known, failure to obtain good results when employing them, frequently arises through some fault or faults in their application.

For the benefit of those people who are interested and may be anxious to adopt a sewage scheme suitable in general to private houses with plenty of ground around them, I propose to give a brief outline of the essential parts and the methods of working them.

This system of sewage disposal is practicable, where the conditions of soil permit, for houses and institutions containing inmates up to the number of three or four

hundred. It can be applied to greater numbers than these even, but with the sewage of three or four hundred people to be disposed of, the amount of ground necessary for the distribution bed becomes rather large, and above this figure it is questionable whether it be not more economical to introduce some form of artificial beds, which can be accommodated in much less space. However, it must be borne in mind that the final effluent from a system of artificial beds is never quite as fine as one from a land distribution bed—this is a question to be treated of later. The dimensions of the septic tank and the distribution bed are directly governed by the amount of sewage put forth from the house or institution, and as a basis for calculation I have found it good practice to take the average daily output of sewage per capita for 24 hours, to be 50 gallons. In towns on this continent this quantity would be under the average, but in country districts where usually there is no public water supply available, this figure of 50 gallons is a very fair average.

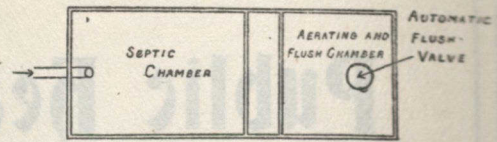
Of course, if it be known that the per capita consumption of water is greater than 50 gallons, then the fact must be taken into consideration; in other words, if the water supply be known, the output of sewage will be the same for all practical purposes.

On this understanding then, the capacity of the septic tank must be such as to accommodate the whole output of sewage for 24 hours; e.g., if there be three inmates and an average output of 50 gallons of sewage from each, the total will be 150 gallons per 24 hours, and this would be the capacity of the tank, and so on for any number.

The shape of this tank must be oblong, about twice or three times as long as it is broad, with a depth of about three feet at its deep end. The object of this particular shape is to allow the solid matter in the sewage every opportunity of settling to the bottom of the tank, and to prevent it being carried through the outlet from the chamber, which is situated as far from the inlet as the dimensions of the tank will permit.

In this chamber, which we may term the septic chamber, the first important change takes place. The change is one of liquefaction of most of the solid constituents of the raw sewage, and is brought about by

an army of microbes termed "anaerobes," i.e., germs which live and propagate in the absence of air (oxygen).



Most of their work is completed within 24 hours, and any solid matter which they have not been able to dispose of within this period, simply remains behind in the septic chamber, there to undergo the process of liquefaction at leisure so to speak.

From ordinary house sewage, it is surprising how little solid matter remains at the bottom of the septic chamber, but on the surface of the liquid a thick scum collects in course of time, chiefly composed of fat and soap curd. However, this material does not cause much trouble, for from ordinary house sewage the quantity is such that it takes on an average two or three years before enough remains over from the liquefying process to necessitate a cleaning operation. However, this very fact brings out an important point in considering the disposal of sewage by the septic tank process, viz.: if by chance the sewage to be treated contains a very large amount of soap curd, then a cleaning out of the septic tank of scum will be necessary once or twice a year. I wish to lay some emphasis on this point, because I find in practice that people are very apt to let these sewage disposal plants go without any attention whatever; fortunately, in the treatment of the ordinary run of sewage the amount of fat and soap curd is moderate, and such that most of it is disposed of by the septic action due to the anaerobic microbes, and what little remains over is, comparatively speaking, so small, that it takes a year or two before the quantity attains such proportions as to necessitate a cleaning out of the tank. This amount of trouble and attention is really a very small price to pay when one considers the benefits accruing to people having such an installation for disposing of their sewage; indeed I know of no system suitable for small institutions, which, while being efficient, gives less trouble to keep in order. Unfortunately as yet, no scheme has been devised, which will run

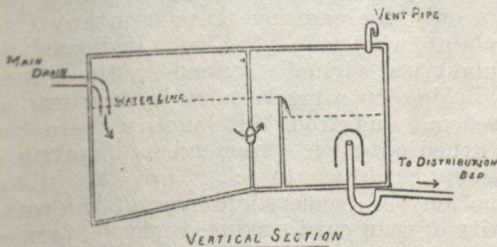
itself without being tended in any way.

So much then for the septic chamber—its work being to render into liquid form most of the solid organic matter in the raw sewage. The effluent from the tank differs markedly from the original raw sewage. It is a slightly turbid fluid, of a somewhat brownish or yellowish hue, containing only a moderate amount of solid matter in suspension, and this finely particulate. Its composition is fairly constant, being more or less the average of 24 hours and has most of the decomposable organic matter in solution, thus rendering the ultimate breaking up of this matter more easily attainable.

The process thus far has been “anaerobic” in character, and we can now dispense with the services of the anaerobic germs—at the same time we desire to call into requisition the “aerobic” bacteria, these germs requiring air (oxygen) in order to live and thrive.

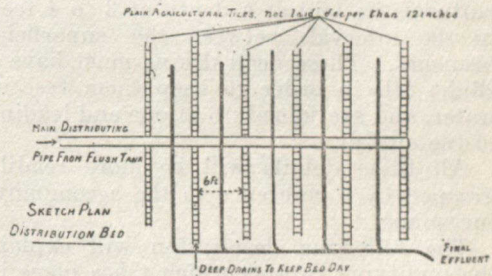
It is to be borne in mind that both of these classes of germs are ever present in the raw sewage, and all we have to do is to place the sewage under conditions which will exclude the air, or allow its free admission, to encourage either the anaerobes or the aerobes respectively. In the septic tank we practically allowed only the anaerobes to flourish by the rigid exclusion of air.

The next step after the septic chamber, is to allow the aerobes to thrive, and this we do by simply admitting fresh air to the sewage in the aerating chamber, which incidentally is made to do service also as a flushing reservoir. This flushing process is a very essential part of the mechanics of the system and provides for the complete and even dosing of the distribution bed with the septic tank effluent.



A moment's consideration of the scheme of the septic chamber will show that the effluent will only flow out of the tank at precisely the same rate as new sewage en-

ters it from the main drain, and as many people know, the flow of sewage from any dwelling varies enormously at different periods of the day, sometimes being only a mere trickle, and when this is the case, the effluent will be but a trickle also, and if allowed to run to the bed, would find its way entirely into the first part of the distributing area nearest the tank, so preventing an even distribution all over the bed.



The size of the flush chamber is therefore directly governed by the size of the distribution bed, and the best results are obtained when the bed is flushed once or at the most twice, in the 24 hours.

The capacity of the flush tank would, under such circumstances, be either the same as that of the septic tank, or half its size.

An automatic valve is placed in this chamber, which will release the fluid in full force, as soon as the flush tank is full.

There are several good makes of these valves on the market, but those having no moving parts are the best, because any hinges, etc., quickly clog up owing to the corrosive properties of the effluent.

From the flush tank the effluent is conducted to the distribution bed by means of a water-tight tile pipe.

The main distributing pipe lies in the centre of the bed, and the branches come off on each side of this at intervals of not less than 6 feet—each branch should not be longer than 25 feet.

The whole of these branches, together with the central distributing pipe, are laid dead level.

The branches consist of plain agricultural tile, one foot long each, the joints being left open about a quarter of an inch, laid in a trench 12 inches deep, and two to three feet wide. The trench is then filled with small clinker cinders.

The agricultural tile are 4 inches in diameter, and, being a foot long, will hold approximately half a gallon. On these data the number of tiles required can easily be calculated, to accommodate the amount of effluent coming from the flush tank at one flush.

These superficial pipes are the true distributors, but in order to prevent the ground becoming water-logged in any way, it is necessary to instal a system of deep drains. These consist of ordinary agricultural tile laid at a depth of 3 to 4 feet, in the intervals between the superficial branches. These deep drains must have a slight fall in order to keep them free of water, and are joined up at one end leading to the outfall.

All these details will be more readily grasped by a reference to the accompanying plans.

The following description will explain the purifying process which takes place in the distribution bed.

The aerated tank effluent is introduced in a thin sheet to the bacteria lying in the superficial layers of the soil. They are, as we have seen, true aerobes, and naturally will be found more abundant nearest the actual surface; this fact is very important to remember, because, in digging the trenches in which the superficial pipes were laid, the depth was never to exceed 12 inches. This is for the reason that the aerobic germs do not exist in any numbers in the soil deeper than 12 inches.

The tank effluent fed to these aerobes contains a large amount of decomposable organic matter in solution, and their special role in life is to dispose of this material, converting it into simple salts and water. The salts are held in solution in the water, and carried down through the interstices of the soil, until the water reaches the deep drains, when it appears at the outfall as a clear liquid, possessing no smell or other objectionable qualities, in fact being indistinguishable from ordinary water. This remarkable final change being brought about by the aerobes in the upper layers of the soil.

The soil richest in these aerobic bacteria is a good porous loam; gravel and pure sand contain comparatively speaking, none. Clay is a very bad soil to deal with under

any circumstances, because it is very nearly impervious to water, thus preventing that natural and necessary percolation taking place which has been referred to already.



The final effluent from one of these small plants, properly constructed, is a very fine one indeed; as a matter of fact I do not know of any other process or system of sewage purification which will give such a high standard of purity as regards the final effluent. The only unfortunate circumstance in this respect is the inapplicability of this scheme to large amounts of sewage; the land requisite mounting up to impracticable proportions in those cases where large amounts of sewage have to be dealt with.

Another point worthy of notice, is that these plants are suitable to all climates, hot or cold. No fears need be entertained about frost; although the distribution bed is so very superficial, the pipes never freeze up, the effluent from the tank is always warm, and by the time it is cooled down, it has gone down into the deeper layers of the soil where the temperature is above freezing point.

Again, these plants have another recommendation, the tanks are all beneath ground, and the distribution beds are not unsightly at any time, and may even be incorporated into an ornamental garden scheme. As a matter of fact, the cinders are the only part visible in the whole plant.

I have installed a good many of these plants during the last twelve years, and in only one case has there been any complaint whatever. In that instance, the plant was virtually ruined by the owners hitching up a big laundry to the drainage scheme, and from this laundry there was turned out such a tremendous quantity of soap curd, as to clog up the distribution bed; some slight idea of the quantity of soap curd produced may be formed, when I state that over a ton of soap was used annually in that laundry.

SCHOOL INSPECTION AND THE PUBLIC HEALTH SERVICE

By GEORGE A. AUDEN, M.A., M.D., D.P.H. (Cantab.), M.R.C.P. (Lond.)

Coming amongst you, as I do this evening, a stranger and sojourner, it is not an easy matter to find a subject upon which I can speak to you without presumption. As the subject of school hygiene is one of the latest developments of preventive medicine, I propose to deal with the relationship of school hygiene and medical inspection of school children to the general public health service and, attempt to show the close interrelationship and vital connection which must exist between them. I have heard it stated in England by persons ignorant of the conditions, the scope and the possibilities of the movement, that medical inspection of school children is the latest fad, founded upon the movement towards a benign state socialism, and that it is a death blow to parental responsibility for the physical welfare of their offspring. Those who make statements of this kind betray an ignorance of the trend of civic government to-day and a refusal to acknowledge the tremendous possibilities for social progress which medical inspection affords.

That "the child is father of the man" is as true of physical as of moral and intellectual development, and we shall all be in agreement when we state that at the foundation of all true national progress lies the problem of the child, its health and education.

No high ideal of citizenship can be attained unless we direct our most strenuous efforts to secure a healthy childhood. We may, perhaps, this evening, regard ourselves as standing upon some exoteric eminence whence we can survey the whole stream of child-life, flowing as a river from its tiny beginning in the cradle to the great sea of industrial life. It is of no avail to attempt to purify a stream if the source be a polluted one, except by purifying the source. The child must be the centre of interest and his well-being the end and aim of reform. If we look back upon the evolution and development of the public

health service, we cannot fail to recognize that there has been a remarkable shifting of the centre of gravity in the attitude of Boards of Health from the consideration of the environment to the consideration of the individual. Medical health officers are to-day less concerned with problems of water supply, sewage disposal, etc., than with the attempt to grapple with the infant mortality, the prevention of tuberculosis and zymotic disease. In this regard of the individual, medical inspection is destined to play an increasingly important part, its foundation must therefore rest upon the broad basis of public health, as an integral part of the great nexus of ameliorative agencies which are at work. The school lies midway between the state and the home, and it is through the school that it is most feasible to reach the home, to gauge its condition, and to remove to some extent at any rate, the evil results of those conditions. It is, moreover, the training ground of the parents of the future and the seeds of intelligent instruction sown here will fructify and yield a harvest of health for future generations. At present only too often "The hand that rocks the cradle wrecks the world." Speaking of conditions in England, the external environment has been improved beyond all knowledge within the last fifty years, and the diseases which were associated with environment have largely vanished. Typhus, relapsing fever, enteric fever, malaria, and even scarlet fever have vanished or have been largely reduced in frequency and severity; yet our infant mortality has remained the same year in and year out, thus proving that the causes which produce our high infant mortality rate are less environmental than personal, and are due to conditions in the homes and habits of our people. This is clearly seen by a comparison between the various mortality rates of rural and urban districts, or, still better, between the rates of different areas in the same city.

Year by year we in England and Wales

sacrifice 150,000 children to this grim Moloeh — what a hecatomb of human life; what a mass of futile pain and sorrow is here revealed. There might be some solace in the thought, if these were only the weakly and less fit of the infants born into the world, and if it could be felt that by means of the conditions which lead to infant death, Nature, "red in tooth and claw," secured the survival of the fittest to carry on the struggle into after years. But there is no ground for this comforting assumption. On the other hand, the damaging and devitalizing conditions through which our children pass leaves them marked and seared by the struggle through which they have passed, and so long as we allow those conditions to continue we cannot hope to secure a high physical standard of fitness in the coming generation. Those of us who have had any large maternity experience will recognize the truth of the assertion that, inherited disease excepted, all babies come into the world endowed with the same physical possibilities, it is the conditions of the home in which they are born which very largely determine the issue of the struggle to secure a foothold in the ascent of the ladder of life.

I have laid stress upon the question of infant mortality because the study of infant mortality is the necessary preliminary in the study of child disease, and because "the wounds and reddening scars remain" to be seen in school life. There is clear and definite evidence that the physical condition of school children born in a year in which the infant mortality rate is high is less satisfactory than that of the children born when the infant mortality rate is low. As Dr. Kerr has well put it, "The greatest effect upon the life capital of the nation is produced by the infant mortality." My own investigations in Birmingham point to the truth of this assertion. "It is the conditions which surround the child from its birth onwards which largely determine the results found on medical inspection when the child reaches school age and no attempt to grapple with the defects revealed thereby can exclude the consideration of the wider problem of causation which is involved."*

There is one other point to which I wish to direct your attention, I mean the necessity of establishing a complete confidence and co-operation between the medical prac-

tioners and the medical department of the Education Committee or Board of Education.

The introduction of the school doctor into the scene must profoundly modify the curriculum, for it allows an increasingly definite classification of the children in accordance to their physical and mental capacities. The blind and deaf receive further subdivision into the partially deaf and partially blind with their own special needs of a modified curriculum. The progressive myopes, and recurrent keratitis—the stammerers and stutterers and the hard of hearing; the epileptic of normal intellectual attainment; the choreic child or the child of organic heart affection; the weakly or pre-tuberculous child, and so on. The proper classification of these children can only be obtained by the establishment of mutual confidence and complete co-operation between the school medical officer and the medical men under whose care the children have been placed. In this way each medical man is brought through the medium of the school into more close and intimate touch with the general system of public health service than has ever before been possible, and he thus has it in his power to serve the best interests of his patients, as well as those of the community at large. So often with us in England the failure to appreciate the actual conditions of school life and of a careful weighing of the immediate and ultimate value to the child leads to much absence from school, which is often very prejudicial to the ultimate interests of the child.

Or, let us look at another aspect of this problem, arising out of the infant mortality question.

When we examine the children in our schools we can roughly divide the defects found into three main groups:

(1) Sense defects and imperfections; mental deficiency; visual defects; deafness defects which come into prominence chiefly because of the influence they exert upon the educability through the absence or deficiency of the senses.

(2) Contagious diseases, which may be regarded as the accidents rather than the consequents of school life. These include the zymotic diseases, ringworm, parasitic diseases, etc. To this group we shall return later on.

(3) By far the most important group of

* Report to the Education Committee, Birmingham, 1911.

defects are those which are due to conditions antecedent to school life: Rickets, malnutrition, glandular enlargements, adenoid conditions, tuberculosis lesions, infantile paralysis, congenital deformities, bronchitis, bronchial catarrh, and the sequelæ of diseases. In other words, these defects are in a direct continuity of association with those conditions which lead to a high infant mortality rate, and a high death rate of children prior to school age. These are first revealed by medical inspection, but medical inspection comes too late to remedy in a large number of cases. If a remedy is to be sought, it must be before the children have reached school age. If medical inspection merely means that a larger number of children will receive spectacles or will be relieved of their supra-abundant tonsillar tissue, it will fail of its great opportunity. It must aim at cutting off the source of supply of defects and must go further back: to the homes of the people. In the words of Sir George Newman, M.D., Principal Medical Officer to the Board of Education, to whom in England the organization of medical inspection of school children owes so much: "It is clear that in the age-periods of childhood after infancy we reap a harvest of disease for which we have sown during the infancy period. First, we get many of the actual diseases of infancy continued into the late periods of childhood; secondly, we get the sequelæ of those diseases in the survivors; thirdly, we get a continuance, varying in degree and extent, of those causes and conditions which in infancy yield our high infant mortality rate and in the long run bring about a degeneration of race. If in this way we take a long view of the matter we shall see that an improved physical condition of the children of the nation depends upon our grappling with the problem not only from the beginning, or in other words, with infant mortality at its root, but *grappling with it as one problem.*"*

In regard to the second group, that of the contagious diseases, their relationship to the general public health service is so clear that we need not dilate upon it. The elementary school is not a clearing house of infectious diseases, as has been supposed. Dr. Kerr has, for example, shown from the Registrar-General's statistics that prior to 1870, when the first Education Act was passed, the incidence of scarlet fever was

greater amongst girls than boys, although a much larger number of them were engaged at home and did not attend school.

Or take measles, which reaps so rich a harvest in the early years of life and sows the seeds of further disease, which swell the death rates of subsequent years and are productive of so much ill-health amongst the children; bronchitis, broncho-pneumonia, tuberculosis. In 1907, measles was the direct cause of death in England and Wales of 11,712 children under five years of age, while broncho-pneumonia and bronchitis claimed 30,144 deaths at the same age. It is chiefly through the schools that we may hope to control this disease and attempt to reduce this mortality, for it is only through the schools that we can gain knowledge of the spread of the disease. Close your schools and at once the only knowledge of the incidence which is accessible is that furnished by the death returns. This is surely like locking up the stable when the horse is stolen.

If we turn to tuberculosis, we find the same interdependence. Tuberculosis has been described as a disease of ignorance rather than a disease of poverty. It is not a disease of school. Our English statistics point to about 1 per cent. of children in elementary schools suffering from pulmonary tuberculosis. Under modern conditions of school attendance, with the attention to ventilation and floor space per child, pulmonary tuberculosis cannot be considered a school disease. It is essentially a disease of overcrowding and still more of close personal contact with an actual sufferer from the acute disease. Of 254 children whom I have under my repeated observation as showing suspicious symptoms of pulmonary disease, by far the greater portion come from homes in which there is or has been recently a sufferer from phthisis. If we segregate the adult sufferers we shall practically cease to see pulmonary tuberculosis in our schools. Here, again, we must go down to the home.

These examples will serve to illustrate the nature of the problems met with in medical inspection of school children. School hygiene cannot be regarded as a subject *sui generis* limited to the sphere of school life and school premises, but it is an integral factor in the activities which promote the well being of the nation. The essential unity of the problems revealed calls for a unity of effort to deal with

them, and no administration in water-tight compartments can be permanently satisfactory.

There is one other point to which I wish to draw your attention, because of its supreme importance to the national development, and because the opportunity, if once neglected, will vanish never to return. In Canada you have the opportunity of securing a healthy and a satisfactory environment, such as in the Old World we can never see again. The slums and courts and alleys which disgrace our cities and manufacturing towns need never have come into existence. When I say that, where some of our worst slums in Birmingham stand to-day, a century ago were market gardens, you will understand what I mean. By securing a healthy and satisfactory environment for your citizens you will do much to remove the antecedent conditions which tend to disease and distress, but it cannot be too strongly urged upon your notice that the attempt to secure the racial fitness of the nation by purely environmental reforms alone and the removal of the mother and child from unhealthy surroundings will be vain unless you have regard to the nature of the stock from which they spring. Nature is

stronger than nurture. If your stock is degenerate, your future citizens will be inefficient. A healthy childhood springing from a sound parentage is the greatest economic asset of a nation.** In England, in our efforts to ameliorate the lot of the weak and inefficient by environmental reforms we are in danger of penalizing the sounder stock. We have not only hindered nature from weeding out our social wastage, but we have made the conditions increasingly favorable to the multiplication of this degeneracy, and are producing a population of lower average fitness. "Parentage and motherhood have been placed at a grave disadvantage in the battle of life relatively to childlessness. The child is economically a commodity which, like other wares, is produced to meet the demand."* It has been stated that a high birth rate connotes a high infant mortality rate, but there need be no relationship between the two. By securing a healthy environment, and a sound education in healthy habit and conduct, much may be done to reduce the latter, but the chief thing will be lacking if there is not, in addition, a healthy motherhood. See to it that the former is encouraged.

REDUCING INFANT MORTALITY.

By BENJAMIN A. GOULD, A.M. (Harvard)

In these days when a diminishing birth-rate is occupying the attention of the governments of many countries, it is of increasing importance that the death-rate of infants should be reduced to as low a point as possible. Much has already been done toward this end, but the mortality of infants under two years old is still alarming.

By far the greater part of this mortality is caused by malnutrition. The deaths from other causes are becoming better and better controlled, and the advances made in municipal sanitation and the increasing knowledge of sanitary requirements is aiding greatly along these lines. The most important need, however, is for better nutrition for the infant until it reaches the

age when it can use the ordinary foods of the household.

There is, of course, nothing superior to the mother's own milk, provided that it is normal and sufficient in quantity and that the infant is normal. The number of mothers, however, who are either unable or unwilling to nurse their children is far greater than in the less complex conditions of society a few years ago. Again, the milk of the mother cannot be varied to suit any peculiar needs of a child not entirely normal in its digestive functions, and furthermore, many mothers are unwilling to adopt the strict and systematic diet necessary for the best results for the child.

Up to very recently there has been no

*** "The Problem of National Eugenics," Prof. Karl Pearson. * Loc. cit., p. 29.

prepared food which conformed to the needs of the infant. By far the best of the artificial foods has been a split-proteid modification of cows' milk prepared in a milk laboratory. The chief trouble with this food is the difficulty of obtaining it except in large centres; the necessity of obtaining it with great frequency to have it always fresh; the difficulty of keeping it in proper condition, and the price which makes it entirely beyond the reach of any except the wealthy classes. The so-called home modifications of milk are almost always unsatisfactory as they not only have all the drawbacks incident to the use of the ordinary milk obtainable by the ordinary householder, but also are usually thoroughly unscientific. The modification usually consists in decreasing the casein content by dilution with water and then building up the sugar content by the addition either of cane sugar or commercial sugar of milk and the addition of cream to increase the fat content. This, however, not only does not increase the important albumen content in the cows' milk, already deficient by one-half as compared with mothers' milk, but even further decreases it by the dilution with water. It is also deficient in ash. The only correct modification is by whey, whereby the lact-albumen content is increased, the casein diminished, and the ash maintained. But even this may contain too small a total solid content for an advanced infant owing to the large amount of water in the whey. The total solid content cannot be varied at will.

It is hardly necessary to speak of the unsuitability of the ordinary prepared infants' foods. Practically all of them have a cereal base, and contain a considerable quantity of starch. In some the starch has been altered to maltose, dextrose, or some similar starch derivative, but this does not and cannot take the place of lactose, which is the natural carbohydrate for the infant. The continued use of a food containing a predigesting agent such as pepsin or pancreatin endangers the ability of the child to assimilate unpredigested foods when their use becomes necessary. Again, these foods without exception have been sterilized and lack the antiscorbutic properties of a fresh food. Even those which are known as milk foods and which contain a greater or less quantity of the solids of milk have in all cases been sterilized, the

result being that the natural enzymes of milk have been destroyed, a certain part of the salts has been rendered insoluble and unassimilable, and the milk albumen has been coagulated and rendered insoluble. Where commercial sugar of milk has been added, the process of refining has unquestionably destroyed some of the natural qualities of lactose present in fresh milk and the food value of a synthetic combination of commercial sugar of milk with other food values does not produce the same results as the natural lactose in the fresh milk.

Recently a process has been perfected of reducing milk to powder by spraying the milk in a spray so fine as to be practically a fog into currents of heated filtered air. The latent heat required for the rapid evaporation which takes place is supplied both from the surrounding air and from the solid content of the minute particles of milk suspended in the air, so that the milk is actually cooled by this drying process. Every other system of drying milk depends upon bringing the milk into contact with heated metal surfaces, and in every case results in raising the temperature to a point where the milk enzymes are destroyed, the milk salts—especially the bone-making calcium compounds—altered, and the milk albumen coagulated and rendered insoluble. Under the spraying process, however, none of the above objectionable features exist.

During the past year several hundred cases of infant feeding with modified milk powder made by the above process have come under the writer's supervision, and the results obtained have been such as to lead to the belief that a radical advance in infant feeding has been made. The milk has been obtained from inspected dairies in one of the best milk-producing sections in Canada and the modification has been made under laboratory conditions with a rennet-precipitated whey made from sweet milk to give the proportion of about three parts of whey solids to two parts of milk solids. This makes a modification approaching nearly to mothers' milk, as it contains slightly less than one-half of the normal casein present in cows' milk and more than twice the milk albumen. The modified milk has been lightly pasteurized to a point sufficient to destroy all pathogens but not to a temperature

high enough to destroy the enzymes or to coagulate the albumen.

In every case of a normal infant this food has given satisfactory results when intelligently used. Not a single case of rickets or scurvy has developed, and in many cases the infants have been fed exclusively upon this food for upwards of a year. The high ash content has resulted in unusually good bones and teeth, and the easily assimilated albumen and the proper proportion of casein have made firm and healthy muscular development. By using a sterilized water to dissolve this modified milk powder all danger of bowel trouble has been eliminated, and the infant has made a steady and continuous progress. The best results have been obtained where the child has been weaned on the modified milk powder, using it for two or three weeks as an adjuvant to breast feeding. The food is also more easily prepared than any other, requiring only to be dissolved in sterilized water at the feeding temperature.

In cases other than normal, where the digestive functions of the infant have been impaired by attempting to assimilate other foods, it has in a number of instances been found necessary to feed the child temporarily upon a whey powder made by

the same process. This whey powder is practically free from casein and fat, but contains a very large percentage of soluble milk albumen, of ash, and of lactose. The milk albumen is so easily assimilated that even the weakest digestion can obtain a sufficient amount of protein to carry the infant along until it is able to take either the straight modified milk powder or a solution containing part modified milk powder and part whey. In certain very difficult cases it has been necessary to use the whey powder for as long as eight or nine weeks before the infant was able to assimilate any casein. This whey powder also permits the physician to make any desired modification with pure milk ingredients, and to vary the proportions of casein and albumen according to his desires, and has proved invaluable in the frequent cases of infantile casein dyspepsia where even a small quantity of casein forms an undigested curd.

As a result of the work done with these foods during the past fifteen months it is apparent that the practical results which the physician can obtain correspond closely to the theoretical results which the method of preparation of the foods would indicate.

THE TUBERCULOSIS EXHIBIT OF THE ONTARIO BOARD OF HEALTH.

By JOHN W. S. McCULLOUGH, M.D.

CHIEF HEALTH OFFICER OF ONTARIO.

This exhibit, inaugurated some three years ago, has been shown in a number of the larger centres of the Province, also in a tent at many of the fall fairs, as well as in Montreal, Quebec and Toledo, Ohio. It is an educational feature of the campaign against consumption.

Amongst other things, the exhibit shows charts, maps, models of tents and sanatoria, photographs and colored pictures, a tent fully equipped for use, and demonstrations of the value of outdoor life in connection with the treatment of tuber-

culosis. Literature respecting the disease is distributed and lectures given upon the subject. Accompanying the exhibit is a first-class reflectroscope and upwards of 600 slides illustrating various phases of the cause, prevention and cure of tuberculosis.

During the winter of 1910-11 a new departure was made for the first time in Canada of showing this exhibit in a railway car upon the siding at railway stations. In this way a larger number of places was reached. A car, 60 feet long,

was rented from one of the railway companies and the exhibit placed therein. It was found by this plan that smaller places where, perhaps, suitable hall accommodation could not be secured, but where the interest in the exhibit was at least as great if not greater than in larger places, were reached. In most of these places talks upon the subject, illustrated in many cases by lantern views, were given by local medical men, clergymen and others, or by the writer. In several places Dr. G. D. Porter, Secretary of the Canadian Association for the Prevention of Tuberculosis, delivered interesting lectures. A considerable amount of interest was aroused and endorsement of this plan of education in the matter of tuberculosis has been received from the majority of places visited. In all, the exhibit was shown during the months of December, January and February in 57 places. It is the intention to continue this plan of procedure during

next fall and winter, when we hope to have a first-class lecturer accompany the exhibit.

When the general public understand that tuberculosis is a communicable disease, that it is not dangerous to have consumptives about if proper precautions (which we try to teach), are observed, that drugs, especially patent medicines, are not the essentials of cure, they will have begun to appreciate the value of our educational campaign.

The death rate of tuberculosis has in the last few years materially decreased in the Province. In 1909 there were 2,511 deaths in an estimated population of 2,333,864, or 1 in every 13 deaths. (Total deaths, 32,636).

The exhibit will be shown in connection with the Public Health Exhibit at the Canadian National Exhibition to be held in the city of Toronto next autumn.

EVOLUTION OF LOCAL PUBLIC HEALTH: COUNTY HEALTH ORGANIZATIONS.

By P. H. BRYCE, M. A., M. D.

As was stated in a previous article* in which the evolution of the Local Health Board as it exists in Ontario to-day, was outlined, the smallness of the unit, with the exception of the several larger cities, has made it plain after nearly 30 years' experience that some change is absolutely essential to the development of aggressive scientific public health work in Canada. Naturally, experience brought the authorities in England to the same conclusion earlier, since as long ago as 1888, what is known as the Local Government Act was passed, which provided that each borough with a population of 50,000 or over, and every county with this population became as well as other specially isolated areas, *county units* for public health purposes. It is quite true that the smaller sanitary areas, even parishes, may still exist within these larger county units for public health purposes; but still the County

Council and its permanent Medical Officer of Health dominates the situation. In addition to these public health duties this County Officer of Health may act as coroner, to be appointed by the County Council. Similarly any sanitary authority within a county may delegate its public health duties to this County Officer of Health.

So far indeed has this evolution gone on that in 243 county school areas the County Officer of Health has been made, in addition to his other duties, the Medical Officer under the Education Board in 223 of the total areas.

At first a number of the County Councils were slow to take advantage of their enlarged powers, and hence all did not at once appoint County Officers of Health with much more than nominal powers and salary; but to-day, in most of the county units, full-time Medical Officers of Health

*The Public Health Journal, March, 1911.

exist, and there are few more influential bodies to-day than the Medical Officers of Health represented in their Society, with several thousand members. The report of the Poor Law Commission, issued in 1909, approves of still further unifying County Public Health work by providing that the County Officer of Health may have medical and sanitary charge of the industrial schools and houses of industry.

Enough has, however, been said to indicate the evolution of public health in England, where the earliest and best work has been done with results upon the general health, judged by the mortality rate, which are the wonder and envy of every progressive country. It is then not to be wondered at that the writer, laboring to build up a working public health machine in Ontario, and constantly looking to England for inspiration, should early have recognized that the primary requisite for the progress of public health everywhere throughout Canada was the widening of the municipal unit to such an extent as to make possible the appointment of a well trained medical officer to preside over the health destinies of a county or riding, and so equipped not only with technical knowledge, but also with such adequate salary, as would enable him to become the guide, philosopher and friend (through his laboratory), of the practising physicians, of the veterinarians, of the school teachers, of the dairymen, farmers, and, indeed, of the whole community.

The need for evolving out of the health machinery of 1884 for creating Local Boards of Health and their officers, a body of trained medical officers of health, from practising physicians, was encouraged through the organization in 1886, at the time of the meeting in Toronto of the great American Public Health Association, of the Association of Executive Officers of Health of Ontario. This Association, amongst the first on the continent, maintained for many years an active existence, and its annual reports, printed by the Provincial Board of Health, form one of the most complete compends of discussions on municipal public health subjects extant in America.

Dr. J. M. Shawe, of Keene, a village practitioner, in a paper at the meeting in 1903, gave some of "The Chief Reasons for a Change as soon as Possible from the Municipal Medical Health Officer to a County Health Officer." He said: "Hav-

ing been for years a medical health officer of a township it is no wonder I have very strong views on this important matter. I will now touch on a few reasons why I have arrived at this conclusion, viz.: A doctor in active practice is often urged by his patients to say nothing about a case of infectious or contagious disease, so that they will not be quarantined." . . . "Once more, in case of a severe epidemic, it is almost impossible for a doctor to neglect his practice and give the necessary time to stamping out the disease; to say nothing of the great danger while being rushed with work of not taking proper time to disinfect clothing, and thus running a risk of spreading in place of checking the outbreak; besides, it cuts off a lot of practice, as some people are very much afraid of these diseases classed as contagious, and consequently they go to another doctor who is not attending one of these cases."

These extracts give in a simple manner the exact situation of some 600 medical health officers in Ontario, and presumably proportionate numbers in the other provinces, who to-day are paid from \$5 to \$50 per annum, and upon whom the country has really to depend, not only for the routine performance of public health work, but who must, if we are to progress, also become local apostles of health and initiate improvements to carry out the ever enlarging knowledge of science as applied to public health.

It need hardly be said that it is hopeless to expect progress under such conditions. Rather it is absurd to suppose that under the conditions outlined by Dr. Shawe, physicians or any other class or men in our wealthy communities are in a position to devote themselves to a propaganda, the results of which must be the seeming lessening of their own emoluments, and the bearing of other people's burdens to a point exceeding even that which Holy Writ calls upon men to assume. In a recent paper on "Social Efficiency in Local Public Administration," by Dr. A. News-holme, Chief Medical Officer of the Local Government Board, it is stated that the salaries for the medical officer and sanitary inspector are about \$150 in a small rural area of 2,000 population, while the amount per capita decreases steadily till in a county borough the cost of the officer of health is reduced by 50 per cent.

It is hence, perfectly evident that in a

work of the highest scientific and technical character, involving as it does the widest and most exact knowledge of the exact sciences, no real or permanent advance is possible without the enthusiastic devotion of a trained man to the work and to this must be added adequate laboratory facilities for the work to be done, and a permanent appointment, secure from political influences, and encouraged by such remuneration for services of supreme importance to the community and country as will

create a body of medical officers of health, one for every county or large urban area, whose work will promote more than any other single agency, national welfare, communal prosperity and individual happiness.

How the special county health organization is to be worked out in Canada and what the wide work of a county health officer should be, will be outlined in a final paper.

THE PHYSICAL EDUCATION OF BRITISH CHILDREN.

By PHILIP SNOWDEN, M.P.

In 1907 the British Parliament passed an Act to create a department of medical inspection in connection with the National Education system. For some years previous to that time a few education authorities, notably Bradford and the London School Board, had done such work in a limited and experimental way, and the facts which had been ascertained by these bodies, and which had been put before Parliamentary Committees and the Congresses of various societies, showed that the health of a large number of the children attending our elementary schools was in a deplorable state. With the assent of all parties in the House of Commons, legislation was passed three years ago to give the Board of Education power to require every local education authority to appoint a school medical officer, who must make a medical examination of children immediately before, or at the time of, or as soon as possible after their admission to an elementary school. By a later order of the Board an examination was to be made of all the children then in the schools of the

country. A proper system of school medical inspection cannot be organized in a year, and up to the present the work of the officers has been mainly directed to the building-up of an efficient method of examination and tabulation, and of bringing the vari-

ous voluntary societies which exist to provide medical relief into close touch with the school medical department. "The aim has been to devise the most simple and expeditious way of bringing the children through the process of medical examination into the hands of those qualified to treat them without unduly harassing the parent or weakening his responsibility." The idea in the minds of those who instituted this system of school medical examination was to ascertain the general physical condition of the school children and the state of individual children, so that the school curriculum could be adapted to their capabilities, and so that incipient disease might be detected and arrested. The idea was that the medical examination would enable the education authorities to make the physical development of the children as much a part of their work as the education of the mind.

The chief medical officer of the Board of Education reports that most of the provincial education authorities have begun to do their work in a thorough and systematic way, over one hundred of them having made examinations beyond the requirements of the code. The London County Council is given a very severe reprimand for its neglect to do the work imposed upon it by law. The report says: "I should be failing in my duty if I did not make it clear that the degree in which this authori-

ty have fallen short of accomplishing the work it was their duty to do is without parallel." The Council has appointed a large staff of school doctors, but they appear to have been employed in anything but the work they were required by statute to carry out. During last year there was no statutory medical examination at all in some 800 of the schools in the metropolitan area. It is a pity that the London education authority, which did good work in this respect when there was no legal compulsion to do it, should now be lagging behind the rest of the country. Since the end of last year, I believe, there has been an improvement in the medical examination work under the London County Council, and the report of the chief medical officer of that body, dealing with the health of the metropolis in 1909, shows that there is need for all that can be done to improve the health of the children of that great city.

It is too early yet to give exact and precise statistics as to the number of children who are suffering from disease or physical defects, but the report gives a general statement which shows to what an alarming extent the children in our day schools are suffering from ill-health and physical shortcomings. About 10 per cent. of the six million children attending the public elementary schools of England and Wales suffer from serious defect of vision, 3 to 5 per cent. suffer from defective sight, 1 to 3 per cent. have suppurating ears, 8 per cent. have enlarged tonsils so bad as to require surgical operation, 20 to 40 per cent. have extensive and injurious decay of the teeth, 40 per cent. have unclean heads, 1 per cent. suffer from consumption in an easily recognizable form, and a number suffer from heart disease. The chief medical officer remarks that: "It is to be feared that in the aggregate this formidable category of disease and defect means a large degree of suffering, incapacity, and inefficiency."

The medical examination of the children has revealed a very unsatisfactory state of things with regard to the cleanliness of the children. It will be seen from the figures given above that 40 per cent. of the children were found with unclean heads. In one western county 49.3 per cent. of the children had "nits." This is a state of things which need not exist, and one for which poverty is no excuse. It is satisfactory to note that there has been an improvement since the examinations first be-

gan. Some parents have resented the interference of the school authorities with the right of the parent to keep the child in a filthy condition. One child in a particularly objectionable state of uncleanness was sent home by the teacher with a note to its mother asking her to clean the boy. She sent back the boy in the original state with a note saying: "I sends my Jimmey to school for you to teach, not to smell. He aint a rose." But the parents who have in the past been neglectful of the condition of their children are now being shamed into keeping them in a more cleanly condition; and as filth is so often the mother of disease, the local authorities ought to have drastic powers to compel parents to keep the bodies of their children free from dirt. Some local authorities have excluded children from school on account of their filthy condition, and this has often had a good effect on the parent.

It is little use being in possession of the facts as to the physical condition of the children unless there is some provision by which those suffering from disease or defects may be treated. One of the chief values of this inspection is that defects are found of which the parent was quite ignorant, and by immediate attention to the matter the disease may be arrested or cured. Unless something is done to "follow up" the examination, both it and the cost of it is wasted. The local authority should systematically keep a record of all cases of disease or defect, and at regular intervals ascertain from the parent what is being done to treat the child. In most cases the parent will be in a position to obtain the medical or surgical treatment needed, but where he is too poor the child on no account ought to be neglected. The local authority should come to the assistance of such cases, either by helping the parent to get assistance from some voluntary society which exists to relieve such cases or by directly assisting the case themselves. There is always an inclination to neglect attending to a disease or defect which is not felt to be immediately serious, and it is to be feared that in most cases of slight defect—such as deficient hearing, or defective vision, or bad teeth, the parent will ignore the report of the school doctor unless he is pressed repeatedly not to do so. The importance of having the children grow up as healthy as possible is as great as it is that they should grow up intelligent.

The parents have, on the whole, supported the local authority with quite remarkable sympathy. In some towns as many as 70 per cent. of the parents have attended the medical examination.

The local authorities cannot stop at examination and report. It is gratifying to know they are not doing so. Some districts have appointed school nurses, and these women are admirably fitted to act as a medium for carrying out the instructions of the school medical officer. The ailments from which the children suffer, such as filth diseases, can be best treated by the district nurses instructing the parent as a friend. The Children's Care Committees, which exist in some places, can take up the work of following up the report of the school doctor. In several districts these committees are at work. The school medical officer for the West Riding has issued a very valuable set of rules and regulations for the guidance of such committees who may wish to assist the education authority in providing medical or surgical attention for ailing children. The system of medical examination has not been in practice sufficiently long to enable full returns to be made as to the results in the way of attending to the reports given by the school doctor; but figures have been supplied by a number of authorities, and for a beginning they are quite satisfactory. The county of Glamorgan stands far away at the head in the percentage of children who have received treatment for defects and diseases pointed out by the school doctor. Those suffering from squint have all been treated, and 96 per cent. of the cases of deafness have been attended to. In some places the percentages of cases treated is not more than one-fifth.

The local authorities have really done extremely well on the whole in carrying out their duties in regard to the physical condition of the children. Over forty authorities have employed school nurses, and last year £1,650 were spent in this way. Other authorities have subsidized the district nurses, who have taken on the additional work of looking after the defective children. Last year, 37 authorities pro-

vided spectacles for children at a cost of about £500. The Board of Education has given power to a number of education authorities to make grants to the local hospitals, and in that way they are able to nominate children for admission to these institutions.

The most important development of all in connection with the medical branch of education is the school clinic. This is a medical centre under the control of the education authority for the treatment of children. It is useful also as a centre where more exhaustive examinations of the children may be made than is possible in the school. Such diseases as those of the skin, teeth, eyes, and ears can be most satisfactorily treated in this way. The special sanction of the Board of Education is needed to enable an education authority to set up a school clinic, and during 1909 eleven authorities sought and obtained such powers. The one established by the City of Bradford is the most complete one in existence in England. In 1909, 2,323 cases were treated in this institution.

A few years ago there were few people who would have approved of the education authority taking any account of the physical condition of the school children. The facts very briefly set out above show that a revolution is going on in the world of education. A former Minister of Education once said to me: "I have been working to get the doctor into the schools because I know that after him will follow all I want to see in the way of the public treatment of the diseased and deficient child." Three years ago it was only medical examination, now we have medical treatment. The latter was sure to follow the former. But we have not finished yet. The State has accepted a responsibility now for the physical condition of the children, which will compel it to add more duties to the present until provision is made by which every child will receive all the care and attention which science can provide, so that it will grow up with a strong, clean, and healthy body as well as an educated and developed mind.

HOW TO GET RID OF DISAGREEABLE SMOKE.

By CYRUS LÖCHER.

With the beginning of the use of soft coal as a fuel, arose the problem of how to get rid of the disagreeable smoke. The question has grown more serious yearly in every growing city where bituminous coal is burned. More than 1,500 patents have been granted by Canada and the United States to inventors of so-called "smoke consumers" and "smoke burners" and everywhere municipal governments have taken up seriously the abating of smoke.

Experience has demonstrated that objectionable smoke may be prevented, even though soft or bituminous coal be used exclusively as fuel. By careful firing, either by hand or a mechanical stoker or feeder, fresh coal can be evenly distributed over the hot furnace bed. This, with the aid of mechanical devices designed to perfect the draught and so cause a sufficient uniform degree of heat to reach all parts of the coal, avoids a "smothering" which produces a lower degree of heat favorable to the separation of the material which makes smoke from the body of the coal. Sometimes an entirely new furnace equipment is the only remedy.

In Chicago an estimate by the smoke inspector shows that smoke, besides being a nuisance, causes a loss to the citizens of \$21,830,000 annually, or about \$10 per capita. The laundries, clothing merchants, dyers, house renovators and painters and operators of vacuum cleaning machines are reaping a harvest. In St. Louis recently 6,000 pupils in one of the public schools had to be dismissed at 11 o'clock on one of the darkest days, while at other schools within the smoke belt the children were entertained with stories by their teacher during the time it was too dark to study.

In many cities special smoke abatement leagues, exist, because it is recognized that those who live in a smoke-laden atmosphere are especially liable to diseases of the respiratory system. Frederick L. Hoffman, statistician of the Prudential Life Insurance Company, goes so far as to say that the dust and smoke problem underlies all

deliberate efforts to improve the conditions which determine human life. Other things equal, the length of life will be in almost exact proportion to the degree and kind of dust and smoke exposure.

What is required to-day is effective public supervision, for all matters of this kind involve the question of community responsibility. The control of the smoke nuisance must needs have its effect on real estate values, which are now in many places depressed because of it.

Smoke abatement, which is simply complete combustion and utilization of all heat-producing parts of the coal, is economy to the consumer of fuel. In every case smoke is a preventable nuisance, and every smoking plant or locomotive is a sign of wastefulness and a disregard for the rights of the public. Creating dense smoke is a waste in itself, and its emission creates additional waste. Thus it follows that the interests of the private owner and the requirements for public health, comfort and convenience run in parallel lines. Proper laws for the regulation, prevention and abatement of "dense" smoke are, therefore, just to the consumer of fuel and highly desirable to the public.

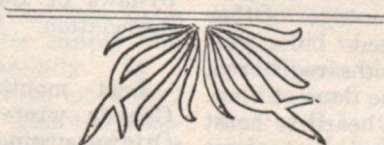
The source of governmental authority to abate the smoke nuisance is the police power of the state. This means the general right of the government to preserve and promote the public welfare by establishing such rules and regulations for the conduct of all persons and the management of all property as may be conducive to the comfort, safety and welfare of society.

The legislature frequently gives to the municipalities the power to declare what shall be deemed nuisances within city limits. Cities also have the power under the common law to cause the abatement of nuisances that are such in themselves without being specifically so declared. If the legislature gives the cities specific power to declare the emission of dense smoke within their limits to be a nuisance, it must

be exercised by ordinance and not committed to the discretion of municipal officers.

Some courts have held that the words "emission of dense black or gray smoke" are vague and uncertain, but these decisions are outweighed by the trend of later verdicts throughout the country. Everyone knows what is meant by "dense smoke." It is easily recognized by the sense of sight, and leaves its mark wherever it falls. Convictions may be obtained by the ordinary prosaic manner of asking witnesses of what they have seen. Juries and courts will not pretend to be more ignorant than the rest of mankind. The jury decides as a question of fact whether smoke coming from a chimney is dense.

Courts have taken judicial notice of the fact that the discharge of dense smoke into the atmosphere in a large city is of itself a nuisance to the general public. It is injurious to vegetation, to many kinds of goods and annoying to the people. The courts, therefore, confer upon municipal corporations ample power to prevent a nuisance which of recent years has greatly interfered with the health, comfort and convenience of citizens. In view of the advanced legislation and judicial decisions in recent years, we may well say that the law pertaining to the smoke nuisance is progressive and will keep pace with the popular sentiment regarding the emission of "dense" smoke into the air in large centres of population.



Editorial

Infant Mortality.

An infant mortality of something like 196 per thousand births in 1907, and of about 155 per thousand births in 1908, for the Province of Ontario, is something that needs immediate attention. In the first place, let us look to our figures, for there is nothing so misleading as statistics. Both these results are arrived at by taking into account all still-births as births, and also as deaths. We should have our infant mortality calculated independently of still-births altogether. Still-births should be recorded carefully and published, but published in a separate statement, and infant mortality should be calculated from the total number of births in the year (still-births not included) and the total number of deaths under one year of age during the year (still-births not included). The requisite information to enable us to do this is not given in the Report of the Registrar-General for 1907, nor in the Report for 1908. It should be.

Then we should also have a separate statement of the infant mortality of illegitimate children.

The next thing to do is to improve our registration percentage. Other civilized countries succeed in getting 90 per cent. of the births registered. Do we? No. This should be done at once. A prominent physician was heard to boast the other day that he attended at about 300 births per year and did not notify or register one of them. Surely we might do better than this. Probably the physician should be paid for this service. After all, it is not a medical function. We are not State officials—not yet. Some means ought to be found to get our births properly recorded.

The Humor of Sir Almroth.

Exception has been taken in some quarters to the second of the Lady Priestly memorial lectures of the British National Health Society, delivered recently by Sir Almroth Wright, M.D., F.R.S., on "Bacteriology and Health."

There was a widespread belief, he said, in part, that people could keep disease away by following the rules of individual hygiene. These rules were that they must eat a lot, have a certain amount of exercise, wash and have plenty of fresh air. He was persuaded they were quite wrong, particularly in regard to Turkish baths; and though he felt that such things might add to the pleasures of life, he did not think that cleanliness was to be recommended as a hygienic method.

Sir Almroth Wright is a distinguished member of the profession, having done valuable work in every branch of physiological and pathological research. It is to him that we owe our knowledge of the opsonic index.

We are inclined to think, therefore, that in his Lady Priestly Memorial lecture Sir Almroth has been joking with the laymen and perhaps having "a good tug (*a la* Osler) at the professional leg."

Inter Alia.

We are publishing in this issue, under Meetings and Reports, the constitution and by-laws of the Canadian Public Health Association

Last month the Governor-General of Canada wrote a letter to the mayor of Ottawa urging an immediate warfare on house flies. He suggested that a systematic campaign should be inaugurated and called on the mayor to take the lead, believing that Ottawa, as the capital, should set an example to other cities in getting rid of the fly by removing conditions which attract it or encourage it to breed.

Earl Grey proposed the same old remedy, cleanliness, the natural enemy of disease at all times. It is not merely necessary to keep a house clean and well screened, but the premises as well. A filthy back yard can breed enough flies to bother thousands of people, and a person who screens his house and pays no atten-

tion to his back yard, is merely protecting himself, while breeding pestilence for his neighbors.

Many people are negligent and careless and permit pestilence breeding filth to accumulate. As a chain is only as strong as its weakest link, so a community is only as sanitary as its most unsanitary spot.

Health is largely a matter of habit whether of the individual or the community. Daily obedience to a few simple laws is the one great guarantee against epidemics as well as against ordinary diseases.

The most effective work that can be done towards reducing the death rate is to school the public in habits of everyday and universal sanitation. This, of course, requires not only the enactment but the strict enforcement of sanitary measures.

Dr. J. W. S. McCullough, chief health officer of Ontario; Dr. Charles A. Hodgetts, of the Conservation Commission; Allan Hasen, civil engineer, of New York; T. C. Keefer, civil engineer, of Ottawa, and Professor Shutt, of the Ottawa Experimental Farm, have been appointed a committee to examine the water supply and sewerage system of Ottawa and are instructed to "investigate the best sources of water supply and sewerage disposal for the city."

It is generally felt that reflections upon and investigations into water supply will hurt a community commercially. Is a municipality's reputation worth more than the health of its citizens? There is absolutely no reason why any town should not have a pure water supply. The supreme court of the State of Minnesota has recently ruled that a city is responsible for any injury or death resulting from water. If we had such a rule in parts of Canada, perhaps some of the sanitary officials in charge of water supplies would issue a warning when accidental contamination occurs.

Compulsory vaccination throughout the Province of Quebec has been decided upon by the Provincial Board of Health, as a result of sporadic outbreaks of smallpox reported of late. A decree has been promulgated instructing each of the 1,500 municipalities of Quebec to enforce general

vaccination. Many municipalities already have such laws, but now it will be incumbent upon all the rest to pass such laws within five days after the order is received from the Provincial Board of Health. In most of the rural districts such orders are to be promulgated by announcements from the church doors after mass and within 48 hours from such announcement the law goes into effect, and any person who cannot show proof of proper vaccination within seven years, will have to submit to vaccination under the penalty of \$5, with further penalties if they refuse to comply.

In relation to such matters, it has been decided to divide the Province of Quebec into ten districts, each under the supervision of an inspector, specially trained and examined for the post.

Compulsory vaccination will not apparently be enforced in the Toronto, Ontario, schools, although Dr. Struthers, Chief Medical Inspector, seems to favor it. The school management committee have recommended that the parents be asked to let their children be vaccinated and that medical inspectors be permitted to vaccinate those children whose parents or guardians have requested it.

In the report of this committee, the recommendation is also made that in order to protect school children from the danger of contagious disease, new scholars or those promoted to another class, be given a new set of books that shall become the property of the pupil; and that books ordered to be destroyed by the Medical Health Inspector on account of contagious disease shall be replaced by a new set supplied by the Board of Education.

It is also proposed to establish in Toronto a laboratory for the dental treatment of the poor children of the city. The urgent need of such work is shown by the fact that the recent investigation made by the medical inspector in public schools revealed that fully 99 per cent. of the children are in need of dental treatment.

Toronto's health officer, Dr. Charles J. C. O. Hastings, is advocating a number of admirable reforms in sanitary matters. Considering the common drinking cup, he writes: "Inasmuch as human saliva and

expectoration are the principal media through which the germs of such diseases as tuberculosis, diphtheria, typhoid fever, and other communicable diseases are spread, it must be apparent that the public drinking cup or glass is a frequent source of the spread of the aforesaid diseases. Its use is, consequently, prejudicial to public health, and it therefore becomes my duty, under the Public Health Act, to ask your board to see that the aforesaid public drinking cup or glass be removed from the schools under your jurisdiction, and sanitary fountains or sanitary drinking cups substituted therefor, at your earliest convenience."

As a substitute for the common drinking cup in schools, public buildings, parks and elsewhere where there is a municipal water supply, the bubbling fountain is most efficient. But where drinking cups are an immediate necessity, a new scheme to minimize the cost has been recently advocated. It consists of a roll of stiff manilla paper attached to the wall near the water cooler so that the thirsty may tear off a piece, make it into a cornucopia or anyone of the numerous forms of cups to hold water; the paper to be thrown away after drinking. Such rolls of paper would cost approximately \$1 per roll, the paper used to be nine inches in width. By using a square piece a servicable cup could be made on the instant, which for all practical purposes would be as good as those cups sold for a cent or more each. Using the inner side of the paper a practically clean surface is secured, which is more sanitary as, on account of the paper being rolled up, dust and dirt cannot settle on its surface.

A by-law to protect food stuffs from contamination, submitted by a committee of the Toronto Board of Health, declares that all articles of food for sale are not to be conveyed from place to place or kept in an open window or doorway or outside a building unless covered with clean material; that every place where food is stored and sold should be kept in a wholesome condition; that all persons engaged in handling articles of food shall wear clean outer garments; that any room in which articles of food are kept or sold shall not be used

for domestic purposes; that the use of newspapers or unclean paper for wrapping articles of food is prohibited; that every vendor of food stuffs shall keep in his waggon a water-tight covered receptacle for the wastes of his business.

There is one thing lacking in many of the cities and towns of Canada, and that is efficient restaurant inspection. Such inspection, where it is carried on, embraces a number of interesting features. A score card is used as a matter of record, and every restaurant proprietor is given full explanation of its uses. A system of points makes up the standing of a restaurant inspected, and a score is made up of proportionate points. The restaurant kitchen, ice-boxes, attendance, pantry or storeroom, methods of washing dishes, the dining-room and surroundings constitute the "curriculum" of this inspection, which makes for general cleanliness, absence of flies and other insects and wholesome service. Under this system a restaurant scoring 85 is regarded as high grade, while one below 50 is weak in sanitary measures.

The mainspring in such a system is the publicity given these monthly reports. No doubt in some places it would be difficult to put such a plan into effect because of political or other pressure brought to bear to prevent it, but such inspection of restaurants is necessary; a flood of light judiciously tempered and directed against vulnerable spots is marvelously effective. In these days of sanitation it is no less than a crime to tolerate dirty restaurants and unclean food and drink.

Expectoration is one of the chief ways of spreading consumption. Take this in connection with the fact that the vast majority of our towns have no street sprinkling nor oiled roads; and the people literally bit the dust—all sorts of filth combined in its make-up—and what is the natural result?

Let it be ended for keeps. There is no excuse for raising disease spreading clouds of dust. In cities when sprinklers are barred by the temperature, there should be no day sweeping unless of the pick-up kind.

Library and Laboratory

A Manual of Physical Diagnosis.

Dr. Brefney Ralph O'Reilly, of Toronto, has issued *A Manual of Physical Diagnosis*, which we believe deserves to be carefully read, not only by the beginner in medicine, but by the experienced practitioner. One difficulty that we are glad to see has been overcome in the treatment of this subject is the lack of discrimination, usually found in works of a similar character, between essentials and non-essentials. Dr. O'Reilly has also advanced a step in laying special stress upon the importance of inspection and upon the desirability of regarding the patient as a personality, rather than a mere abstract physiological or pathological problem.—*A Manual of Physical Diagnosis*. By Brefney Ralph O'Reilly, M.D., C.M. (F.T.M.C. Toronto, M.R.C.S. England, L.R.C.P. London). *Demonstrator in Clinical Medicine and Pathology, University of Toronto; Assistant Physician to St. Michael's Hospital, Toronto; Physician to Toronto Hospital for Incurables. With six plates and forty-nine illustrations. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut St., 1911.*

The Encyclopædia of Municipal and Sanitary Engineering.

For this work, it is claimed, with perfect justice, so far as we are aware, that it is the first of its kind. The literature of the subject is voluminous, municipal and sanitary engineers being remarkably prolific in authorship; but the innumerable papers, reports, articles, pamphlets and other treatises they have produced make, in the aggregate, a chaotic and altogether unwieldy mass, in which a vast amount of exceedingly valuable information lies almost hopelessly buried. To Mr. W. H. Maxwell and Mr. J. T. Brown has occurred the happy idea of digesting this mass of materials; and the result appears in a handsome volume of moderate cost, in which the whole subject, in its various phases, is dealt with in the only really practical way—that is,

in the form of an encyclopædia, in which the alphabetical arrangement, while it necessarily involves a certain amount of repetition and over-lapping, is undoubtedly the most convenient method for reference. The editors, who have enlisted the co-operation of about forty contributors of unquestionable authority, have adopted the fair and wise course of affixing the initials of the authors to the more important articles—fair, because it is due to the respective writers to give them full credit for their work; wise, because the value of the information in any given instance can be more properly appreciated when one knows who is responsible for it—a point that is of special importance where systems or methods are sometimes in rivalry. The volume, so far as we have been able to test it, has been conceived and carried out in the right scientific spirit. For a one-volume encyclopædia, it is not over-bulky; and by the use of smaller type and smaller-scale diagrams, and by the more rigid condensation of the articles, some of which show a tendency to elaboration, as if the authors had not quite overcome the lecturer's habit of discursiveness, the book might easily have assumed still more modest proportions. In that case, however, it would inevitably have lost much of its present handsome appearance, to say nothing of its legibility; but as the subject continues to grow, such methods of compression as we have ventured to indicate will probably become necessary. We should have liked to see more attention given to what may be called the bibliography of the subject. Although many of the articles are, as we have said, unusually copious, one cannot reasonably look to an encyclopædia for absolutely exhaustive treatises under the various headings, but rather for concise summaries, with indications of the sources of other and fuller investigation. It may further be suggested that an analytical index would have been useful; for although the articles are, of course, in alphabetical order, it frequently occurs that one does not always know off-hand un-

der which heading to look for certain items to which the article-heading offers no precise clue—a deficiency that a good analytical index would supply. This difficulty, however, has been anticipated, and partly met, by the insertion, in bold type, at the head of some of the sections, of a sort of syllabus of the contents; which, however, does not answer the purpose of a good index. The volume, nevertheless, fulfils a distinct want, and the medical health officer will read it with profit.—*A Handy Working guide in all matters connected with Municipal and Sanitary Engineering and Administration. Edited by W. H. Maxwell, A.M.Inst.C.E., and J. T. Brown, M.R.San.Inst., London: Constable and Co., Ltd. 562 pages, 8x10½. 42s. net.*

Hospital Administrative Work.

A recent little publication of the Massachusetts General Hospital officials, Frederick A. Washburn, M.D., and Joseph B. Howland, M.D., administrator and second in command, respectively, *Hospital Administrative Work*, gives attention to the need of educating men and women to take charge of hospitals. There is a constant large increase in the number of small institutions, which, while small, can by no means afford to be cared for by incompetent or inexperienced persons, and continual appeals are made to the larger institutions by the managers of the smaller ones for information on what are ordinary administrative subjects. "The realization that hospitals were suffering," writes Dr. Washburn, "while untrained superintendents were learning their business, led us to establish at the Massachusetts General Hospital a couple of years ago a course of training for these women." The policy of the management of this institution has been to furnish to the administrator a number of competent medical assistants. At first there was one, and the number has been increased till now there are four, each of whom is an understudy to the one above him, and the hospital need never suffer by the sickness or loss of any one of them. The economic policy has been followed to pay enough to get and retain the best men. A further advantage in the plan has been to relieve the administrator of detail, so that he may have the time to learn by study or inspection of the progress of other institutions. The assistants are thus assigned; the first is the executive of the

main hospital, the second is in charge of the McLean hospital, the third is the head of the out-patient department and the fourth assistant is the admitting physician. These men are in close touch with the duties of their respective departments, they look closely after the condition of the patients on entrance and departure, one of them making a daily ward visit at the general hospital with a special eye to many matters like the danger list, the special nurses and the complaints of patients. Such men as the assistants are in training to become the heads of large institutions, and already one such assistant has been thus advanced.

At the Massachusetts General Hospital up to now only graduates of the training school of the institution have been taken in the special course for training in administrative work, and of these only those who have stated their intention of becoming hospital executives. But it has seemed best to widen the scope of the school somewhat and in the future it is to be open to the best equipped graduates from the Massachusetts General Hospital, or other nurse-training schools. It is a movement to fit keen and interested women who are mentally and physically active, for these responsible positions. Two students only will be taken at a time, this being the maximum established by experience. The work is observing, assisting and, finally, temporary charge of a room or a department. This includes such matters as the laundry, where the assistant is expected to take full supervision for a limited time; the inspection of the plumbing and steam piping; the use of ventilating or heating apparatus and such other items, even though not usually supposed to be in a course of nursing, but which are important when the nurse is the responsible manager. The administrative course includes work and experience in the admission office, the general office, both for records and accounts, the resident physician's office, the record library, accident ward, surgical building, the store, this being the commissary and supply departments, the apothecary shop, and the out-patient rooms. Then there will be observation in the housekeeping departments, the general kitchen, diet kitchens, serving room and laundry. Included also are instructions along the lines of the duties of the various attendants and nurses, maids and ward tenders, and a

knowledge of the details of the social service work which is coming to be so important an agent in the hands of skilled hospital authorities in the way of preventive medicine through the betterment of the homes of those applying for assistance. As a part of the course there are conferences on the subject of hotel administration.

In concluding their paper, Drs. Washburn and Howland note that seven nurses have thus far been graduated from this course, all of whom are occupying responsible positions save one, who by choice has deferred her entrance into regular work, and at the same time they outline what has been done in other institutions in different parts of the country. Dr. W. L. Babcock, Superintendent of the Grace Hospital, Detroit, has been giving a similar course for about the same time, two years, and although he has had more than two hundred applicants, has been able to care for only four for each six months. All of the graduates who have desired them, are now holding responsible positions. At Teacher's College, New York City, which has no hospital connected with it, an attempt has been made to supplement the excellent theoretical training by direct relations to a hospital by making arrangements whereby a few of the second year students may be admitted to residence at Bellevue and given practical opportunity to study the problems very closely. Similar advantages to these students have been afforded also at St. Luke's Hospital. The writers urge upon large hospitals the fact that it is their duty to undertake similar work. It means trouble and some annoyance, without doubt, but it increases the popular estimation of the people by the knowledge of a good work done for the community.

Public Slaughter Houses.

No better example, says *The Medical Officer*, can be found of the manner in which vested interests are permitted to hamper and impede public improvements, than that connected with the establishment of public slaughter houses. One of the essentials of a healthy existence is a proper food supply, and it has long been recognized that the manner in which such supply is produced and prepared, should be altogether above suspicion. The conditions

under which animals are slaughtered for human consumption have been vastly improved in many districts during recent years, but a great deal still remains to be done before even a moderate ideal can be achieved. The first step towards reform is the abolition of many existing private slaughter houses in towns. Most of them were erected years ago; they are badly constructed, wrongly planned, and situated in unsuitable localities. Even the most stringent administration of by-laws fails to bring them up to present-day requirements.

Lessons in Army Sanitation.

The present mobilization of troops in Texas is giving the medical department of the army an opportunity to show the progress that has been made since the Spanish war in army sanitation and hygiene. A New York daily paper a short time ago inquired of the War Department what was being done to prevent a repetition of the experiences of the army in 1898, and a reply was received stating among other things that the medical department of the army was ready to supply, for inoculating the troops in the field, an anti-typhoid serum which had been previously tested by 20,000 inoculations in the regular army, and had proved its efficiency. The serum is now being supplied to all the soldiers in the camps at San Antonio and Galveston, which the War Department says is a feat of preventive medicine that for "magnitude and promptness of execution is unique in military history."

Among other measures, a carefully tested system for the disposal of waste has been put in operation which will prevent camp epidemics and nullify the dangerous activities of the common fly. Regarding the plans that have been adopted to safeguard the health of the troops the *Journal of the American Medical Association* says: "Sanitary squads of hospital corps men, under competent medical supervision, have been provided to secure cleanliness of the camps. Trained sanitary inspectors and field laboratories are now provided and the sanitary personnel, while somewhat short in numbers, is expected to be filled up in case of necessity from the medical reserve corps and the enlistment of hospital corps volunteers. The plans for temporary hospitals have been drawn and specifications are ready for the builder."

But an interesting fact is that behind the reorganized medical service of the army stands the Red Cross Society, with its enrolled trained nurses, hence "our boys in blue" will be well cared for in case of sickness. As illustrating the preparedness of the medical department for service, it is said that the hospital equipment and medical supplies left the depots in Washington and St. Louis while the troops were being entrained and arrived in San Antonio at practically the same time as the troops. Moreover, it is announced that ten times the military force sent to Texas could have been supplied and equipped with equal promptness.

Public Health Law and Railway Companies.

Is it right, *The Sanitary Record* asks, that companies should be permitted to be a "law unto themselves"? In other words, because a railway is a monopoly, should it be put outside ordinary methods of administration? Put in this way, it is difficult to reply direct. The provision made for the public service, the vast sums of money expended, and sometimes the small return received, seem to demand some special treatment but how far should this be given? At the same time, we think these are matters upon which there should not be any doubt. The monopolist companies should be compelled to keep their premises clean; they should make proper provision for the accommodation of those who are to use their lines, and who bring "grist to the mill." The ordinary manufacturer has to make provision for the welfare of those who work on his premises, and he has more than one class of inspector to pay attention to him. Let his place be dirty; let the sanitary provision fall short of the proper standard; let there be the semblance of inefficient protection against fire or for the safety of the workers, and at once he is subject to "orders," and if these are neglected, prosecution. The same principle should be applied to all public institutions and companies. The Inspector or officer of the Sanitary Authority must have the right to enter all stations and buildings to see that they are in proper working order, and it should be possible to serve notice on someone if there is anything wrong. It is on this point that we find a divergence of opinion. Some

hold that monopolies and private Acts thwart the officers in what is claimed to be the legitimate performance of their duties. Hence the condition of the conveniences at some railway stations. The power of the company, the fact that often it is one of the largest ratepayers, and the doubt as to the powers possessed — all these factors prevent action being taken, and a nuisance is continued to the possible injury of the people. What is really wanted is a definite view of the whole matter. We could wish that some authority would have the courage to take up a test case if the right of inspection is refused to them. Failing that, perhaps the members of the "examining bodies" would give their views on the question, for it does appear to be a very real problem, judging from the queries which come to us from all parts of the country.

Examining for Cholera Carriers.

In the *New York Medical Journal* Dr. A. J. McLaughlin, of the Public Health and Marine Hospital Service of the United States, has recorded some important observations on cholera carriers which he made in Manila. He has never known a carrier to harbor the cholera bacillus for longer than 20 days, and he has found that the great majority lose the bacillus in less than 10 days. However, much longer periods have been recorded. The longest, observed by Pfeiffer, is 69 days. When cholera is epidemic bacillus carriers are numerous. Dr. McLaughlin found that from 6 to 7 per cent. of healthy persons living in infected neighborhoods in Manila were carriers. On the other hand, when cases are few, the so-called sporadic cases, hundreds and even thousands of stools may be examined before the first carrier is found. The fact that a carrier may harbor the cholera bacillus as long as 69 days explains how quarantine may be passed and an apparently inexplicable outbreak of cholera occur. The danger from the cholera carrier depends on his habits and on the sanitary conditions of the community. If he uses a modern flush-closet and keeps his hands clean he is harmless. But if there is no proper system of disposal of excreta and he deposits his stools where they are accessible to flies, or if he does not wash his hands after defecation and handles food he is a source of danger. The

responsibility of carriers for outbreaks of cholera was proved by Dr. McLaughlin in Bilbid Prison. This prison is one of the best managed in the world; its food and water supply are under the most perfect control. In the annual report for 1906 the occurrence of cholera in the prison was said to be inexplicable, as the drinking water was sterilized and food was under the most rigid inspection, and any food likely to convey cholera was always cooked. Every incoming prisoner was quarantined for five days. Each year, however, when cholera occurred in Manila and the surrounding provinces, outbreaks were observed in the prison. It seemed to Dr. McLaughlin that the explanation could only be that the disease was introduced by bacillus carriers. The stools of the prisoners concerned in the handling of food and water were examined, as it was not possible to examine the stools of the whole 3,000 prisoners. The stools of 17 out of 264 prisoners were found to contain cholera bacilli. Following an order to compel thorough disinfection of the hands upon leaving the latrine and before eating, the outbreak was quickly suppressed. To prevent recurrence the latrines were screened and disinfected, and the stools of incoming prisoners were examined. In spite of the presence of cholera in the surrounding provinces the disease did not reappear in the prison.

Over-growing Diphtheria Bacilli.

Henry Page, M.D., in writing in the *Archives of Internal Medicine*, notes a trial of the over-riding of the bacillus of diphtheria by a non-virulent one, literally a reversal of the process of sowing tares among wheat, for in this instance it is the weeds that are choked and which die. While the principle may not be new in bacteriology, the use in individuals in this direct way has novel features and there is considerable difference in opinion even in face of these statements of the advisability of the use of staphylococcus pyogenes aureus in this way. Dr. Page himself gives a few pretty direct suggestions, one of which is that after a diphtheria outbreak search should be made for carriers, human and animal, of which the human is more dangerous, and in doing this a distinction should be made between virulent and non-virulent carriers. The

treatment of carriers, he says, has heretofore been useless, local measures seem to fail and antitoxin seems to have no effect on their bacilli. Pure cultures of staphylococcus pyogenes aureus sprayed in the throats of seven known cases has destroyed the bacilli of diphtheria. The treatment, according to Dr. Page, is harmless, and should be used in all cases of carriers.

Sewer Air Analysis.

The popular fear of sewer gas is based not so much upon its direct poisonous action as upon its possible relation to communicable disease. For generations, says the *Bulletin* of the Columbus (O.) Board of Health, the belief has prevailed that typhoid fever, scarlet fever, diphtheria, etc., were induced by inhalations of sewer air from leaky plumbing fixtures. Since the day of bacteriology, doubt was cast upon this theory of disease communication. Now it is known that these diseases are due to specific germs. Every case of transmissible disease is due to some prior case. It is difficult in many cases to trace the infection to its origin through certain contact or media. A very important question is: Does sewer gas, as it escapes from defective plumbing systems or from the city sewer, act as a medium to transmit infectious germs to be taken into the human system by inhalation?

This question has been the subject of much research work on the part of scientists. A valuable contribution to the knowledge of this subject is due to the investigations of the Sanitary Committee of the National Association of Master Plumbers. Under its direction Professor C. E. A. Winslow, of the Boston Institute of Technology, conducted a series of laboratory investigations. Investigations were begun in 1907, and a final report was made two years later.

Only a few conclusions can be given. The professor says: "In the whole series of 200 litres of air collected from the most diverse locations on 19 different plumbing systems, not a single sewage organism was found except where the air was exposed to immediate local infection by fine particles of spray."

"Actual examinations of the air in sewers, however, by Miquel, in France; Petri in Germany, and Carnelly and Hal-dane, Robertson and Laws and Andrews

in England, showed that sewer air, as a matter of fact, contains very small numbers of bacteria, and those of types common in street air rather than in sewage."

"In general, my results confirm the results of Horrocks' in so far as they show that specific bacteria may be ejected from liquids into the air above. My tests of house drain air, like those of Carnelly and Haldane, and Laws and Andrews, on sewer air, indicate that mechanical splashing may produce a local infection of the air in immediate contact with the spray. Such an infection does not, however, extend for any distance, or persist for more than a minute or so. I found the general air of house-drainage systems singularly free from bacterial life. Out of 200 litres examined, only 48 contained any organisms capable of development at 37 degs. Sewage bacteria were found in the air of the house drains only four times out of 200 litres, and then in the presence of mechanical spraying of sewage at the point of collection. The general air of the house-drainage system, aside from this local infection, was, as far as examined, free from sewage organisms."

All investigators testify that under certain conditions, as splashing of liquids and bursting of bubbles, sewage bacteria in small number are allowed to escape into sewer air. It is also admitted that the liberation of bacteria from dried sewage adherent to the surface of pipes, by means of air currents, is to be considered. In the light of scientific research, under ordinary conditions, there is little or no danger from sewer gas as a vehicle to transmit typhoid or other pathogenic germs. Sewer air, like other foul and impure gases, for physiological reasons, is to be avoided as detrimental to health.

The Estimation of Ventilation Quantity and Quality for Children's Health.

Lassabriere and Schatzmann, *Ann. de med. et chir.*, have made investigations on the effect which the aspect and ventilation of dwelling rooms have upon children's health. They inspected fifteen dwellings occupied by workmen, factory hands, etc., and considered the aspect, the total air capacity of the house and of the children's bedrooms, as well as the methods of ventilating and heating the whole. They also obtained samples of air from the children's rooms in the early morning, and estimated the amount of oxygen and carbonic acid gas present in them. The children were also examined with regard to their previous illnesses, and an examination of their blood was made. They conclude that the number of illnesses among children is greater as the amount of cubic air space is lessened; thus in a family where the children had been ill fourteen times the air capacity was one-third of that in other houses where the children were healthy. In such dwellings the blood counts showed a considerable amount of anaemia. In bedrooms anything less than 24 cubic feet per child is insufficient, and renders the family susceptible to infectious disease and anaemia. A north or southeast aspect appears to be unfavorable. In some cases the open window at night appears to have sufficiently supplemented the want of air space. The rise in carbonic acid was not probable that long-continued exposure to a vitiated atmosphere will interfere with the oxydation of the child and promote malnutrition.



To the Editor of *Public Health Journal*
nal:

The "Simplicity" of Modern Medicines.

Sir:—Nowadays everything tends to simplicity in medical and surgical practice. After centuries of elaborate stage settings and pretence the doctor nowadays goes to the other extreme, takes the patient into his confidence as much as possible, and uses the homeliest ends he can in attaining his object.

In a recent number of the *Hospital* two very good examples are given, showing how modern research is tending to simplify methods and inconvenience the patient as little as possible.

The first is a substitute for the usual very painful method of skin grafting. A distinguished Parisian professor, Dr. Paul Carnot, has recently discovered that hair has other uses than simply as an ornate covering for the skull; that, in fact, normal healthy skin can be raised from hair seed under suitable conditions.

His method is based on the principle that the tiny cells which make up the hair and their coverings originate from the same tissues which form the skin.

From this Professor Carnot argued that hair tissue might be transformed into skin cells if "planted" on a more suitable soil.

The process, which is simplicity itself, compares favorably in every way with the older accepted practices of skin grafting. First, a few hairs are plucked from the patient's own head. If he happens to be perfectly bald, the hairs can be taken from the head of a near relative. The author states in an article published in a recent number of *Paris Medicale* that the hairs show a readier tendency to develop into new skin when derived from a near blood relation of the patient than when coming from an outside source.

After the hairs are removed, the bulbous swollen end which was attached to the scalp is then cut up very fine with sharp scissors, and the resulting fine hair-dust is sprinkled over the part where the new skin is to be grown.

The whole wound is then covered with a

surgically clean dressing and bandaged. No strong antiseptics are used. In about a week a series of white spots appear at the place of grafting, which gradually enlarge and form a new skin.

The new method has been given an extensive trial by its inventor in his hospital practice, and by its use he claims he has brought about a speedy cure in very severe cases of loss of skin from burns, varicose ulcers, and other conditions in which extensive areas have been denuded of the natural skin.

If the method gives the success in other hands which the inventor has experienced, the old, very painful, and not always highly successful method of stripping off portions of live skin and transplanting them on the denuded surface will soon be added to the rapidly-growing list of "relics of surgical barbarism."

Another "simple" method of treatment which is novel, and which, if it stands the test of time will fill a long-felt want in surgical practice, is the ethyl-chloride spray treatment of warts. The whole apparatus needed is one of the small glass phials of ethyl chloride, with a spray stopper, which any chemist can supply.

Treatment consists of spraying the wart with the drug for a minute at a time, until the upper layer is frozen and painless. This method, of course, has long been used for producing local anæsthesia for minor operations, such as opening boils or abscesses. The freezing-process must be done every second day until the upper surface of the wart drops off, and the remainder shrivels up, leaving only a red spot.

Small warts come away in this manner after a few days' treatment. For deeper ones, the best results are obtained by slicing off the dried upper portion with a sharp, clean razor, and then spraying the ethyl-chloride on the remaining deeper part. The treatment is so simple, harmless and inexpensive, says *The Hospital*, that if it fulfils all that is claimed for it a very useful weapon will be added to the general practitioner's armament.

A. D.

West Toronto Water Situation.

Is it not possible that in attributing the recent outbreak of typhoid in West Toronto to the defective water supply we are straining at a gnat and swallowing a camel"?

Dr. Hastings has well said that the present water supply is much safer than the milk supply, and gives the bacterial count of samples of milk taken in the city showing the presence of 26,759,000 bacteria to the cu. cm., as against 19,000 per cu. cm.—the highest count made on the untreated lagoon water. But the comparison might be carried still further. An expert bacteriologist has recently made bacterial counts of nine samples of fresh meats purchased on the public markets, which show an average of 323,662,000 bacteria per gram. (the equivalent of the cu. cm. in weight). Two of the samples were then cooked, one "rare" and the other "well done," and counts were again made, amounting in the former to 168,000,000, and in the latter to 23,500,000 per gram. Furthermore, the great majority of these bacteria were found to be colon bacilli and other putrefactive organisms which had permeated the flesh of the animal during the "ripening" process to which "prime" beef is subjected.

The bacillus coli communis is not the infectious agent in the production of typhoid fever, as the current newspaper articles would lead us to believe; but it is frequently associated with the bacillus typhosis, which is the offending microorganism, and is for this reason a clue to sewage contamination. A predisposition to the disease is also fortunately essential to the development of typhoid — otherwise we would all get it—and there is perhaps no more potent factor in this respect than the lowering of the local resistance of the intestinal mucous membrane owing to the absorption of toxins produced by the putrefaction in the bowel of undigested remnants of albuminous food such as meats, etc., etc.; a condition known technically as auto-intoxication. It is also a fact that the bacteriologist can find no better culture media for the experimental growth of the typhoid bacillus than beef bouillon and milk, while on the contrary it is a well recognized fact that the juices of fresh fruits, such as the lem-

on, orange, grape and lime fruit are decidedly germicidal.

That a pure water supply is most urgently needed none will deny, but would it not be more radical to urge with greater enthusiasm more rigid regulation of the meat and milk supply? Would it not also be wise for the individual who wishes to avoid typhoid to so regulate his alimentary habits as to make conditions in the intestine unfavorable to the growth of this infectious organism? According to Prof. Metchnikoff, of the Pasteur Institute, this may be accomplished by decreasing the consumption of flesh foods, and making more liberal use of fresh fruits, cereals, and curded milk preparations, such as cottage cheese, yoghurt, kephyr, koumiss and buttermilk, all of which are unfavorable to the growth of putrefactive organisms. Incidentally the Government's reciprocal trade agreement should greatly facilitate a dietetic reform of this nature.

In regard to the increased proportion of typhoid in West Toronto, is it not reasonable to presume that there may be other contributing factors besides the much condemned Humber Bay water? Might it not be possible that the present unhappy situation is to some degree due to the absence of proper sewage disposal in this newly-annexed district, associated with the advent of spring weather, together with the ever-present atmospheric pollution by the noxious emanations from the region of the stock yards?

These are questions which in the opinion of the writer should warrant the candid consideration of our sanitary officials and medical men generally.

W. J. McCormick, M.D.

Cleaning Railway Cars.

Sir:— I should like to protest against one of the customs on some of our railroads. This custom is objectionable, and dangerous. When you ride in a railway car for any ordinary distance, a porter comes along with a broom and a dusting brush. He vigorously sweeps the aisle and between most of the seats. This raises a dust that is ill-smelling, stifling and dangerous. Before it has settled, he sets the dusting brush in rotation. What filth missed you on the first assault covers you on this one. I don't know of any custom so practiced as a rule that is more offensive. To have a coach

swept and dusted in your face is, it seems to me, never necessary. But the question of good manners is secondary. The first point is that this practice is an injury to every passenger. The point needs no further comment. And not only is this a common practice in regular coaches, but it is also practiced in the Pullmans. Every day you may there see a porter, not only sweep the coach, but also sweep the dust from some gentleman right into the face of some lady, and vice versa. Public sentiment, the rules of the railroad, and, if necessary, the law should stop this offensive and dangerous custom.

W. L. W.

Why Landlords Grumble.

Sir:—The reason why so many people move every year is not always the raising of the rent, because rent is not raised every year. A stronger reason is that many peo-

ple consider it cheaper to move than to live in the same flat another year and clean up their own dirt. A new flat or a new building is what a tenant wants. Many people are always cleaning up their parlors, never thinking of the bedrooms nor bathroom nor kitchen, although these are the rooms that should be most carefully cleaned. Think of some of the places physicians and nurses are obliged to go into — no ventilation, dirty bathrooms, dirty closets, dirty faucets. This isn't the landlord's dirt. If the landlord were to remark about the tenants' dirt the tenant would tell the owner to mind his own business.

I might mention one more thing which is very important—the driving of nails in the wood work and into painted and calcined walls, which renders rooms unfit for the next tenant.

Do you blame the landlord for grumbling? Cleanliness is next to godliness.

J. R. H.



Meetings and Reports

DOMESTIC

The Canadian Association for the Prevention of Tuberculosis.

The eleventh annual meeting of the Canadian Association for the Prevention of Tuberculosis will be held in Hygienic Institute, London, Ontario, on Wednesday and Thursday, May 17th and 18th, 1911. The evening meetings will be held in the Y. M. C. A. auditorium. Arrangements have been made with railway companies for reduced rates to delegates. The following is the programme, as announced by the secretary, Dr. George D. Porter, 455 Huron St., Toronto:

Wednesday, May 17th.—Hygienic Institute—10 a.m. Reports from Secretary and Treasurer; Reports from Affiliated Societies.; appointment of special committees. 2 p.m. President's address, J. Geo. Adami, M.D., F.R.S.; "Sanatorium Treatment," Dr. C. D. Parfitt; "Prevention and Treatment of Tuberculosis in Rural Municipalities," Dr. Wm. C. White, Pittsburgh. 8 p.m. Y. M. C. A. Auditorium. Addresses of welcome, Mayor Beattie and Hon. Adam Beck; Address: "The Present Outlook in the Campaign Against Tuberculosis," Dr. Livingston Farrand, Secretary U. S. National Association, New York; "Women's Work Against Tuberculosis," Mrs. P. D. Crerar, Hamilton.

Thursday, May 18. — Hygienic Institute — 10 a.m. "Tuberculosis Among Children, Dr. J. H. Holbrook; "The Tuberculosis Clinic," Dr. Harold Parsons; "Municipal Sanatoria," Dr. J. W. McCullough, Chief Health Officer of Ontario; General Discussion, led by Dr. J. H. Elliott; Report of Nominating Committee, Election of Officers and other business. 1 p.m., Luncheon to Delegates. 2.30 p.m. Reception at the Queen Alexandra Sanatorium (special cars leave the city for Springbank at 2 p.m.). 8 p.m.—Y.M.C.A. Auditorium—Address: "Relation of Bovine Tuberculosis to Public Health," Dr.

E. C. Schroeder, of the Bureau of Animal Industry, Washington, D.C.

Canadian Medical Association.

The Canadian Medical Association will hold its next (forty-fifth) annual meeting in Montreal, on the 7th, 8th and 9th of June. A large gathering is anticipated and some excellent papers will be read. The committee on Public Health have arranged to make their department a special feature of the meeting.

The meeting will follow the convention and reunion of McGill graduates in Montreal, when the new medical buildings of the University are to be formally opened.

Dr. Edward Archibald, 160 Metcalfe Street, Montreal, is the general secretary.

The *Canadian Medical Association Journal* states: "The programme promises to be attractive. Sir James Barr, of Liverpool, one of the ablest and best known of the physicians of the north of England, is coming to deliver the address in medicine. The address in surgery will be delivered by Dr. Primrose, of Toronto. Dr. W. J. Mayo, of Rochester, will be present, and will read a paper on "Gall Stone Disease," with a view to urging early operation. No surgeons in America have had such a large experience in gall stone surgery as the Mayos. They are entitled to speak with authority, and Dr. Mayo will certainly present his views in a clear and attractive form. A number of interesting papers have been promised for different sections. Dr. Casey A. Wood, of Chicago, will read a paper before the ophthalmological section. An opportunity will be afforded the members to visit Macdonald College, which is one of the newest, largest, and most completely equipped of the agricultural colleges of the world."

Winnipeg's Health Report.

Medical Health Officer, A. J. Douglas, M.D., of Winnipeg, has issued his annual

The Editor trusts that all medical officers of health and school medical officers, will remember to forward copies of their annual reports to this office, 43 Victoria St., Toronto, Ontario, as soon as published

report for the year 1910. It is an exhaustive document and is being distributed to the extent of some 500 copies. The report covers every field of work under the supervision of the city health department, includes useful comparisons of statistics and a general resume of conditions by Dr. Douglas.

Dr. Douglas discusses the vital statistics; treats of infectious diseases under their separate heads, noting striking features during the year; discusses the proposed isolation hospital, medical inspection of school children, disinfection, milk and food inspection, medical relief, ventilation, plumbing, etc.; and in winding up pays a tribute to the members of his staff for their excellent work during the year.

Features of the report which should be noted by other city health officers, are "spot" maps of the city, showing the cases of scarlet fever during the year, similar maps of the province showing the location of all shippers of milk into Winnipeg, and a series of charts showing the seasonal prevalence of various diseases.

Ontario Educational Association.

Dr. George A. Auden, chief medical health superintendent for the schools of Birmingham, England, does not believe in separating the health departments of the city and the schools. Dr. Auden visited Toronto at the request of the Ontario Minister of Education to attend the annual conference of the Ontario Education Association. He believes in the necessity for considering the influences on a child's life from birth, and even before, and would make the city responsible for the health of the incoming population. Birmingham has nearly 100,000 school children, and a progressive system of medical inspection.

"The school stands between the home and the State, and it is through the school that the efforts and energies of the public health administration can be best directed to reach the homes of the people," said Dr. Auden, addressing a general meeting of the Association at the April convention on medical inspection in the schools.

"The introduction of this medical inspection," he continued, "was due to the increased recognition of the close vital connection existing between the physical condition of the normal child and the whole process of education. Medical in-

spection was based on the two assumptions that it was a State duty to safeguard society by preventing and suppressing infectious and contagious diseases, and that it was society's duty to initiate constructive schemes for the amelioration of the condition of successive generations."

During the meeting, in the course of his presidential address before the trustee section, Dr. White, of Lindsay, said that "The schools are not the aid to public morals that they should be.

"Immorality," he continued, "is more prevalent in the schools and consequently out of the schools, than it ought to be, and the time for education in this regard is not fully taken advantage of. The school, too, is not the aid to public health that it should be. The teachers either do not know enough about these matters or they do not impart such knowledge as they possess to the young mind, when it is most likely to receive and assimilate it."

Dr. White was of the opinion that the scarcity of male teachers in the public schools was attributable not only to the insufficiency of salaries paid, but also to the fact that the school work lacked in breadth and interest to such a degree as to render the monotony almost unendurable.

The Health of the City of Hamilton.

The most complete annual report ever issued by the Hamilton Board of Health is the one published for the year ending October 31st, 1910. It has been issued in pamphlet form and Dr. James Roberts, the Medical Officer, has therein presented a valuable array of statistics and other information, covering the work of the department. The pamphlet starts off with the quotation, "Prevention is better than cure"; includes with a presentation of the vital statistics for the year, pictures portraying some of the shacks closed by order of the Board of Health, photo reproductions, illustrating the smoke nuisance, and cuts of sanitary and unsanitary cow-houses. The vital statistics have been particularly well tabulated, and the work of the various inspectors is set forth in detail; the last page being devoted to "Healthgrams" which might with profit be familiarized by the public.

Among the diseases discussed is poliomyelitis, which began in Hamilton last July

and continued through August and September, and was probably the first extensive and virulent outbreak of the disease in this country; similar in course and sequelæ to the numerous epidemics which have been recorded and described by epidemiologists in northern Europe and in the eastern and western United States.

In regard to medical inspection of schools, the report states that this work in Hamilton is producing good results and that a determined effort will be made this year to establish a school dental infirmary.

The section dealing with Dr. Shane's department, foods and drink, says in part: "There are a number of small stores where candy is manufactured in basements, also in living-rooms. Candy should be made in rooms exclusively for the purpose and needless to say, the walls, ceilings and floors, furniture and utensils should be scrupulously clean." This section also recommends that street peddlars of ice-cream should be licensed.

The report is creditable to Dr. Roberts and his colleagues, and should go far towards enlightening those in Hamilton who require enlightening regarding the importance of sanitation and preventive medicine.

Constitution and By-laws of the Canadian Public Health Association.

CONSTITUTION.

ARTICLE 1.—GENERAL ORGANIZATION.

Sec. 1. This Association shall be called the "Canadian Public Health Association."

Sec. 2. It shall consist of the General Association for the conduct of the business and the promotion of the general objects and policies of the Association; and of sections when sanctioned by the General Association devoted to special departments of public health.

Sec. 3. The administration of the General Association shall devolve upon the officers and the Executive Council.

Sec. 4. The administration of each section shall devolve upon both active and associate members, and upon special committees of the same.

ARTICLE 2.—OBJECTS.

Sec. 1. The object of the Canadian Public Health Association is the development and diffusion of the knowledge of state prophylaxis in all its branches.

ARTICLE 3.—MEMBERSHIP.

Sec. 1. Members of this Association may be either active or associate.

Sec. 2. Delegate membership may be accorded associate membership on the presentation of written credentials from any organization entitled to send delegates to the annual convention, but such membership shall terminate with the convention at

which the credentials are presented.

Sec. 3. Honorary membership may be accorded only to persons, wherever resident, who have rendered distinguished service to the objects for which the Association stands.

Sec. 4. Active membership gives the right to hold office. It may be accorded only to those who have been, for a period of at least one year, practically engaged in technical branches of public hygiene, or have been for a period of one year on the executive or technical staffs of federal, provincial, or municipal departments dealing with public health.

Sec. 5. Associate membership gives the right to vote on all questions, but not to hold office. It may be accorded to any one not eligible for active membership.

Sec. 6. All members, both active and associate, shall receive the transactions and official Journal of the Association.

ARTICLE 4.—OFFICERS AND THEIR DUTIES.

Sec. 1. The officers of the General Association shall be a President; First, Second and Third Vice-Presidents, a General Secretary, and a Treasurer.

Sec. 2. The duties of the President shall be to preside over all meetings of the Association Executive Council and Executive Committee. His term of office shall begin with the adjournment of the annual convention at which he is elected, but he shall become a member of the Executive Council and Executive Committee immediately on election. He, together with the Secretary, shall certify all administrative acts, votes, resolutions, or other transactions, including the minutes of the General Association, Executive Council and Executive Committee. He shall conduct all the public meetings of the Association in accordance with strict parliamentary usage. He shall give an address at the annual convention on some subject related to public health.

Sec. 3. The Vice-Presidents shall take the place and functions of the President on his request or in his absence, in the order of standing.

Sec. 4. The Secretary shall have charge of all correspondence and records, except those relating to finance, and of all printed publications of the General Association. He shall keep the minutes of the General Association, Executive Council and Executive Committee. Together with the President, he shall certify all acts, resolutions, orders, votes, and the minutes of the General Association, Executive Council and Executive Committee. He shall notify all members of the General Association of the Association meetings; all members of the Executive Council or Committee of all Executive Council or Committee meetings; and all members of all other committees of the General Association, of all acts, orders, resolutions, votes, or other transactions of the General Association, affecting their membership or duties. He shall have custody of all papers; after their presentation to the Association. He shall be chairman of the Publication Committee. He may select to act during annual meetings, an assistant, to be approved by the Executive Committee, but he shall be fully responsible for all things deputed to said assistant. The Secretary shall receive an honorarium annually, during his term of office.

Sec. 5. The Treasurer shall collect and keep on deposit the funds and securities of the Association, and shall give bond at the expense of the

Association, in a sum satisfactory to the Executive Committee, for the faithful performance of his duties. He shall pay such bills against the Association as have been authorized by the Council, and certified by it and by the person, or persons, to whom the expenditure was intrusted.

He shall keep a full, correct and clear record of all the financial transactions of the General Association and render the same annually to the Council for audit. He shall at any time, on the request of the President, furnish to the Executive Committee, a full, correct and clear statement of assets and liabilities to date, of cash on hand, and of outstanding appropriations against the same, and an estimate of income and expenditures for the coming year, together with any other information coming within his jurisdiction. He shall keep continually up to date a full, classified list of all members of the Association, showing the date of election, and last date of payment of fees. He shall collect all fees, and thereafter enrol those who have paid, in a properly classified list, open to inspection by all members, and shall distribute to those properly enrolled the badge which may be provided. He shall act as chairman of the Membership Committee, and as such shall receive and have charge of all applications for membership and of credentials of delegates, and shall carry out all the by-laws relating to the same. He shall keep on hand and issue on request a form of application drawn in accordance with the provisions of the constitution and by-laws. The Treasurer shall receive an honorarium annually, during his term of office, at the direction of the Executive Council.

ARTICLE 5.—ORGANIZATION.

Sec. 1. The President and Vice-Presidents shall serve from the end of one annual convention to the end of the next, and shall not be eligible for consecutive re-election.

The General Secretary and Treasurer shall be elected by ballot of the Association for three years.

If an office be vacated between election periods, the Council shall fill the vacancy pending the next annual convention, when the Association shall fill the vacancy for the unexpired term.

Sec. 5. The Executive Committee shall have all the officers and ex-presidents of the General Association, of the chairman of each section, and of not less than two members from each province.

Sec. 3. The duties of the Council shall be to consider all resolutions presented in writing to the Association and to report to the Association promptly recommendations concerning the same—to appoint, in accordance with the constitution and by-laws, the Executive Committee, together with such other administrative committees as may be necessary, and to receive reports of these committees; to consider and recommend to the Association general policies; to receive from the Association or the sections petitions or recommendations, and to report promptly on the same. A quorum shall be five.

Sec. 4. The Executive Committee shall consist of the President, the General Secretary and Treasurer of the Association and three members of and appointed by the Council. The President shall be the Chairman.

Sec. 5. The Executive Committee shall have all the powers and functions of the Executive Council

between convention periods and shall represent the Association as seems to it best during that time. It shall be the auditing committee of the Treasurer's accounts. It shall authorize appropriations for usual current expenses and recommend to the Executive Council all other appropriations; but no appropriation shall be made or recommended except when cash assets exceed cash liabilities.

It shall decide what organizations may send delegates to the annual convention. It shall keep written records of all its actions and report the same to the Executive Council at the first subsequent meeting of the latter. No member of it shall serve more than three years, consecutively.

Sec. 6. The Treasurer shall be the chairman of the Committee on Membership, and the General Secretary the chairman of the Committee on Publication.

Sec. 7. The fiscal year shall be from the beginning of one annual convention to the beginning of the next annual convention.

Sec. 8. Amendments to the constitution may only be made by the presenting of the proposed amendment in writing at one annual convention, its publication and distribution to the whole membership and its adoption by a two-thirds vote of the members present in any regular session at the next annual convention, provided that notice shall be given of such proposed vote at least twelve hours previous to its being taken.

BY-LAWS.

Chap. 1. The annual convention of the Association shall be held in the place decided upon by the Association at its last preceding convention, and at the time fixed by the Executive Council.

Its officers shall be those elected at the last preceding convention, and its programme that one prepared according to the constitution and by-laws, provided also that due notice of this convention be given to each member of the Association at least one month previously.

The duration of the annual convention shall not exceed five days, and upon four of these only shall be held meetings for the presentation of papers and reports to the sections or the General Association. Meetings of the sections shall not conflict with meetings of the General Association.

COMMITTEES.

Chap. 2. Committees may be established by the General Association for the consideration of subjects relating to the principles and maintenance of public health. Such committees shall be limited to five members appointed by the Executive Council, unless otherwise ordered, and shall report not later than the next annual convention of the Association at which their functions shall terminate unless renewed by the Association. Committees may at their discretion add to themselves advisory members, not necessarily members of the Association. The chairman of any committee shall receive signed questions in writing on the subject matter of his committee from any member of the Association, and shall report the question and an answer to the Association not later than its next regular convention. If such question be received during the progress of an annual convention, it shall be answered, in so far as may be possible, at the next regular session of the same convention.

SECTIONS.

Chap. 3. By the consent of the General Association, not less than ten members of the General Association may form a section of the Association to deal with the work of any department of public health. Such sections shall be composed wholly of members of the Association; termination of membership in the Association shall terminate membership in the section, but the classification of members in the Association need not control their classification in the sections.

The sections may establish such constitutions and rules for the control of their membership and the conduct of their business as shall be approved by the Executive Council.

PAPERS.

Chap. 4. The Programme Committee shall use due diligence to secure papers and discussions relating to the principles and maintenance of public health for presentation at the meetings of the General Association, from the members of the Association and from suitable outside sources. Such papers shall, so far as possible, relate to matters of general interest, technical and special papers being referred to those sections to the work of which they appear to relate. Papers and reports of special committees shall be limited to fifteen minutes for delivery. Relevant discussion shall not be limited except by vote of the Association, but no one speaker shall occupy more than five minutes consecutively. Any member of the Association may take part in the discussion at any section meeting, subject to the constitution and by-laws of that section. The Programme Committee shall make out and print the programme, fix the order of business for the annual convention and report the same to the Executive Committee at its first meeting thereafter. Such programme and order shall not be changed except by vote of the Executive Committee.

ELECTIVE MEMBERSHIP.

Chap. 5. Applicants to elective membership shall be proposed, on forms provided for the purpose, by two members in good standing in any class. The application shall be forwarded to the Treasurer of the Association, who is ex-officio chairman of the Committee on Membership, which committee shall decide to what class the applicant is eligible—thereafter the application shall go to the Executive Council for approval and election.

The Treasurer, as chairman of the Committee on Membership, shall notify applicants who have

been elected that they will become members upon payment of the membership fees.

If a duly elected applicant refuses or neglects to forward his fee to the Treasurer within three months of notification of election, his election shall become void.

DELEGATE MEMBERSHIP.

Chap. 6. Delegates, presenting approved credentials, shall be classified as Associate Members. On registration and payment of the regular annual fees they shall be entitled to all the privileges of their class for the meeting to which they are delegated, without election.

ANNUAL FEE.

Chap. 7. The annual fee shall be \$3.00 for active and \$2.00 for Associate Members, due and payable on election, and annually thereafter. No member of either class, shall be entitled to enrolment at an annual meeting, to a badge of membership, or to the privileges of the Association, until his dues are paid to date, except that if arrearages exceed two full years' fees, payment for two past years and the present year shall restore him to full standing.

Honorary members are exempt from fees.

TERMINATION OF MEMBERSHIP.

Chap. 8. Failure to pay fees for three years, if proper notice of delinquency be served by the Treasurer, shall terminate membership, but the Committee on Membership may on application restore such members, if otherwise eligible, to full standing on payment of the arrearages.

An unanimous vote of the Executive Committee, if confirmed by a two-thirds vote of the Association members present at a regular session of a regular meeting, may terminate the membership of any member.

AMENDMENTS.

Chap. 9. Amendments to the by-laws of this Association may be made by the presentation of the proposed amendment, in writing, at a regular session of an annual convention and the acceptance of such by a unanimous vote of the members present at such session, at least one full day having intervened between the presentation and adoption; or the amendment may be proposed at one annual convention and voted on at the next, and a two-third vote in favor shall then be necessary for the adoption of the amendment.

INTERNATIONAL

Fifteenth International Congress on Hygiene and Demography.

During the last week of September, 1912, the Fifteenth International Congress on Hygiene and Demography is scheduled to be held in Washington, D.C., although some correspondence is now being carried on with a view to amalgamating this con-

gress with the Fourth International Congress of School Hygiene to be held in Buffalo in the summer of 1913.

The Congress of the United States, by a joint resolution passed in February, 1907, authorized an invitation which was formally presented to the Fourteenth International Congress on Hygiene and Demography, meeting in Berlin in Sep-

tember of the same year.

More recently the invitation has been confirmed by a circular letter of the United States State Department.

An important feature of the congress will be an exhibition illustrating all the important phases of public health work and the registration of vital statistics. The director of the exhibition will be Dr. J. W. Schereschowsky, of the United States Public Health Service.

There will be general and section sessions. The topics for discussion are grouped under nine sections, each section having a president, vice-president and secretary of its own. The opening and closing meetings will be open to all the sections. The topics for discussion are arranged for the interim.

A deluge of papers upon every subject bearing any relation to hygiene is anticipated. The history of the hookworm will be gone into exhaustively, in order to get at the economic aspect of the disease of that name.

A maximum of twenty minutes will be allowed for each paper, and the subjects of the stated ones will be open for general discussion. In the discussions the speakers will each be given but five minutes.

The congress will undertake to pass resolutions on no scientific question, but formal propositions may be acted upon at the general closing session.

There is a growing sentiment among the members against convening the congress every three years, as in the past, with the single exception of the last instance. Five years ago at Berlin a five-year interval was agreed on. Even more vigorous opposition to the triennial plan is expected to develop here next year. The scientists are said to be now almost unanimously of the opinion that the exigencies of their business do not demand an international conference oftener than once in five years.

The convention is expected to rival the International Tuberculosis Congress in size. About 2,000 delegates from all over the world probably will attend. Twenty-one countries, it is expected, will be represented.

The sections are as follows:

Section 1.—Hygiene microbiology and parasitology.

Section 2.—Dietetic hygiene. Hygienic physiology.

Section 3.—Hygiene of infancy and childhood. School hygiene.

Section 4.—Industrial and occupational hygiene.

Section 5.—Control of infectious diseases.

Section 6.—State and municipal hygiene.

Section 7.—Hygiene of traffic and transportation.

Section 8.—Tropical, military and naval hygiene.

Section 9.—Demography.

Second International Conference, on Cancer Research. Official Report.

An official report by Dr. Bashford, General Superintendent of Research and Director of the Laboratory of the Imperial Cancer Research Fund, on the second International Conference on Cancer Research, held in Paris from October 1 to October 5, 1910, has now been issued as a British Parliamentary paper (Cd. 5590). Dr. Bashford attended the Conference as the representative of the British Government. He gives a brief account of the proceedings, and concludes with the following observations:

"Reviewed as a whole, the Conference must be pronounced to have been of value. In my opinion, should another International Conference take place, it will be held under much more favorable auspices both as regards working arrangements and the selection of subjects for discussion and action, notwithstanding the fact that knowledge of cancer is still so vague or ambiguous as to have prevented unanimity, or even a basis for discussion, from being obtained on many points at the Conference in Paris. In particular the delegates were divided upon such fundamental matters as the etiology of cancer, and on what is and what is not a legitimate application of statistical methods to the investigation of the frequency of cancer. Whilst some delegates of high standing advocated its parasitic or infectious nature, others of equal authority strongly opposed such a view.

"No progress was made towards compiling comparable international statistics of the incidence of cancer; nevertheless, in my opinion, the discussion of the plan proposed was a pressing need, of which the importance is but emphasized by the fail-

ure of the project to secure the approval of the delegates. Only good can result from discarding those fallacious methods by which attempts have been made to arrive at a speedy elucidation of the significance attaching to variations in the numbers of the deaths recorded from cancer in different countries at the same time, and in the same geographical area—large or small — at different times. These methods have been widely adopted in various European countries, and consist in taking a "cancer census," or enumeration of persons ill of cancer on a particular date, by means of inquiry forms filled up voluntarily by members of the medical profession. The decision was arrived at in 1902-3 to recommend that such a method of investigation should not be adopted in this country. The wisdom of that decision would appear to have been endorsed by the attitude of the Conference towards the project laid before the delegates, for the compilation of international data of a similar kind, more particularly because many of the delegates also recognized what has often been urged in vain in the past—viz., that the statistics of cancer cannot be treated apart. They are inseparably

bound up with vital and mortality statistics as a whole, and an improvement in the value of the statistics of cancer, for the purposes of comparisons between different countries, can follow only from raising the general level of all the vital and mortality statistics of different countries. Such considerations, and others — *e.g.*, that a "cancer census," far from avoiding the fallacies inherent in all statistics of mortality from cancer, but exaggerates them, apparently influenced the delegates. The attitude of the Conference towards the statistical investigation of cancer marks a distinct advance towards what accurate statisticians have long recognized as the only sound lines of investigation; but it must also be pointed out that under exceptional conditions a "cancer census" may possess advantages for special purposes.

"So long as so much divergence of opinion due to continued ignorance prevails, it is obviously hopeless to attempt to devise rational measures and futile to promote an international crusade for the prevention or reduction of the ravages of cancer, along the lines which are meeting with world-wide acceptance in the case of tuberculosis and leprosy."

UNITED STATES

New York's Registrar of Records on Defeating Disease.

The vigorous campaign against disease which has been waged by public and private agencies during the last few years has yielded results that should encourage still greater efforts. New York's city registrar of records reports that 13,000 more persons would have died in that city last year if the average death rate for the period from 1900 to 1909 had prevailed. The diminution in the number of deaths from tuberculosis and pneumonia was especially noticeable and it was against these diseases that the bureau of health had been particularly active. While some of the agents of the bureau have been going about the city preaching the gospel of fresh air, others have joined with the tenement house commissioners in seeing that landlords provide the means of ventilation. Thousands of rooms that were previously without windows have been given light and air. It is not surprising

that the deaths from foul air diseases should have diminished. Another gratifying feature of the report relates to infantile diseases. It is asserted that the work of the bureau was responsible for the saving of the lives of 6,000 children under five years of age.

There is no question that aggressive, well-managed departments of health such as those of Pittsburg and the State of Pennsylvania, are worth far more than they cost. We are coming to learn that there are few diseases that are not preventable. Campaigns of education conducted by the authorities have taught the public how it may protect itself against tuberculosis and pneumonia and typhoid. The proverb says a man is either a fool or a physician at forty. People generally are coming to appreciate the numerous common sense methods of warding off disease, and with that knowledge which is power are ably seconding the efforts of the medical experts in their behalf.

American Academy of Medicine and the Source of Infantile Paralysis.

As Havana harbor was cleared of yellow fever for the protection of the world, so Scandinavia, as the source of infantile paralysis, must be freed from that disease for the safety of other countries, according to Dr. Jacolyn Manning, of Eau Claire, Wisconsin.

The doctor, who has been delivering in New York a series of lectures before the American Academy of Medicine, says:

"All our infantile paralysis appears to have come from Scandinavia. There in those little homes, where the people, through the long dark winters, live in close, dark quarters, in proximity to their animals, we find much infantile paralysis. Now, there is a sailor in nearly every family there, and naturally he carries the germs to other seaports, whence they are carried inland.

"The true way to meet this disease is to stamp it out of Scandinavia."

Chicago's Engineer on the Conservation of Life.

"The time is now ripe," says Langdon Pearse, sanitary engineer of Chicago, "to call attention to a very important, perhaps the most important, conservation of natural resources that can possibly be considered, namely, the conservation of human life, particularly by the prevention of diseases which are spread through lack of cleanliness and by impure water supply. Of these diseases, typhoid fever is the most prominent, as the typhoid bacilli can be carried by water.

"The direct transmission of typhoid and cholera by water has been known for many years, and many striking instances of great loss of life have been chronicled where an epidemic resulting from a polluted water supply has been definitely traced to a single source of infection. Numbers of innocent people have been cut off in their prime through drinking water upon whose purity they relied. I shall show how it is possible by purifying the sewage to protect our water supplies from gross pollution.

"It is possible at a moderate cost to remove or greatly reduce the obnoxious elements. One of the great requirements of a pure water supply is the freedom from infection by water-borne diseases.

"There are numbers of authentic instances of typhoid infection, but I will content myself with one on the Kennebec, in Maine, which I personally investigated. You can see geographically how the infection travelled down-stream, as the sewage from Waterville reached Augusta, only 17 miles below, and then how a small epidemic resulted in the little town of Richmond, some 25 or 30 miles further down stream. All this might have been prevented had the cities possessed the foresight to purify the river water or to use some other source of supply than the sewage-laden Kennebec. With the lesson of continuous epidemics in mind, both Waterville and Augusta now use sources of supply remote from the river, and comparatively free from contamination, with the result that their typhoid fever death rate has lowered to a normal figure.

To bring the illustrations closer home, I have diagrams of three of the lake cities, Toronto, Cleveland, and Milwaukee, which illustrate to you how conditions grow, which at any time may become serious. In Cleveland nearly all the sewage is discharged from the mouth of the Cuyahoga river in a straight line toward the water works intake, less than four miles away. While the use of the four-mile intake has reduced the typhoid fever death rate much below that prevailing at the time when the water was taken from the old crib a mile away, there has been, however, a slight but gradual increase of typhoid since the change, which will probably continue until some means are provided either to treat the drinking water or to remove the infection from the lake. It is only a question of years at the most when such conditions will result in sickness or in grave typhoid epidemic.

"At Milwaukee, the conditions have already become so serious that a commission of engineering experts has been studying the question for nearly two years to recommend the immediate steps which must be taken to improve the situation.

"In Chicago, the sewage was discharged into the lake prior to the opening of the drainage canal in January, 1900, and the diagram of the typhoid death rate shows very clearly what a marked influence was exerted on the death rate by the removal of the sewage.

"Now, you may ask what are the means at hand for effecting bacterial purification

tion and removing the sediment from a water. The most efficient to-day is filtration. It is possible, in the case of a fairly clear water, where the removal of bacteria alone is required, to effect it very thoroughly at slight cost by the application of small amounts of hypochlorite of calcium, or so-called 'bleaching powder,' without detriment to the citizens. Over 98 per cent. of the bacteria can be killed in this way.

"A filter plant, however, is the only safe and permanent solution of the problem, for the function of a filter plant is to remove the bacteria as well as the suspended matter, or the mud in the water. With modern construction, at moderate cost, it is possible to remove 96 to 99 per cent. of the bacteria and deliver a clear, sparkling water.

"Unfortunately, cases are now beginning to multiply among the cities and towns located on the great lakes and smaller bodies of water, where the great increase in population in the last decade necessitates the treatment of sewage as well as the purification of the water supply. The best example of this is the sewage and water works being installed at Toronto to-day. There are few instances where water supplies have been protected by diverting the sewage from the supply as was done by Chicago.

"Sewage farms are seldom used to-day. Berlin and Paris are the great exceptions, and even they are studying biological methods. In Berlin the sewage farms occupy an area twice that of the city in acreage, and are a grand real estate speculation rather than a sewage disposal scheme.

"In any scheme the sewage disposal and water purification should be considered as a whole, from the standpoint of total cost to the community, particularly in cases where the sewage must be discharged into the body of water used for a drinking supply. It is usually cheaper to filter a lightly polluted water supply than to provide adequate means of sewage disposal. However, some treatment or preparatory process should be applied to the sewage even if the water is to be filtered.

"There is an added reason for the treatment of the water since such insures against all pollution. Treatment of sewage still leaves open a gateway for casual pollution from passing boats, which is very real in the case of the lake intakes, where millions of people pass within gunshot of

the intakes yearly. The typhoid rate on lake steamers, strange to say, is much higher than on land, so that the steamers are carriers of typhoid."

An Opinion from the Massachusetts Institute of Technology.

In a recent paper on the work of boards of health in small cities, Selskar M. Gunn, formerly health officer at Orange, N.J., and now connected with the sanitary research laboratory of the Massachusetts Institute of Technology, presented a number of considerations of exceedingly practical interest. While it is true that most of the important advances in public sanitation have come through the needs and experiments of large cities, their methods are not always within reach of the smaller municipalities.

First of all, Mr. Gunn calls for the care of all records of vital statistics to be in the hands of the Health Department. "This is essential," he says, "so far as records of deaths and births are concerned and the time will probably come when the marriage licenses and certificates will also be looked after by the boards of health." The place of vital statistics has not yet been properly understood as a valuable aid to sanitary science. If scientifically applied and interpreted they are the instrument for measuring the sanitary status of a community and they ought to point out the weak spots and thus indicate where especial effort should be applied. They are the measure of improvements in the health conditions, but it is to be remembered always that they must be accurately kept, for if unreliable they are worse than useless. In looking over the reports of a large number of small cities, Mr. Gunn is struck by the number of these cities that have not yet proper control over such essential records.

One of the revolutionary attitudes assumed by this investigator is that the abatement of nuisances is police work under modern conditions rather than that which should take the time of the Board of Health. Sanitarians are realizing more keenly every day that the vast majority of these nuisances that take up so much time, are not health matters, and do not affect to any very appreciable amount the public health. This is particularly true, he finds,

in the small city which is fortunate in having a good water supply and sewerage system, since then the outhouse, the leaky cess-pool and the resulting pollution of wells is avoided. The latter are, of course, nuisances of sanitary import. If the health officials can be relieved of this work they will be able to devote more of their time to the consideration of the real health problems. The police ought to attend to such things as unsightly dumps, ash heaps, dirty cellars, noisy phonographs, cackling hens and the like. The modern trend is further towards making the plumbing inspector responsible to the city engineer; "and this is as it should be," says this author.

"There is one subject that I fear is not getting the attention it deserves," continued Mr. Gunn, "and it is a very important factor in the health condition, the housing problem." Many of the small cities have bad conditions not only of occupancy, but of construction. The great problem is perhaps not so much the eradication of existing unsanitary conditions, necessary as this may be, but the enactment of such legislation as will prevent the erection of buildings that will be the despair of succeeding generations of health officers. It may be more dramatic to carry on a vigorous campaign against existing bad housing conditions than to advocate work for legislation to arrest this growing evil, but the latter is really a truer prophylactic endeavor and more worthy the attention of boards of health. It would seem as if the time is ripe for concerted action in order to obtain state laws that shall make it impossible for the small cities to have the overbuilt and unsanitary areas of dwellings that now exist and are being increased.

The subject of the annual report of the board of health of the small city was a further topic on which Mr. Gunn has made an interesting investigation. The Institute of Technology at the suggestion of the speaker requested from a large number of small cities their 1909 report. One hundred and seventy-five such cities were addressed, having populations between twenty and fifty thousand. Of these cities, it is hardly creditable to the country to note, that only 77 made reply, about 44 per cent. Thirty-nine sent the report desired, three furnished monthly reports and ten said that the report had not as yet been issued although it was Aug. 1, 1910, while 25 wrote to the effect that they issued no

report. Thus, less than one-quarter of the cities selected could furnish to the Institute a report of their vital statistics. From his own correspondence Mr. Gunn was able to increase the number of reports examined to 56. Twenty-five are from Massachusetts cities and it is easy to see that on the average they are more satisfactory than the reports of the cities in other states.

The striking feature of the reports is their wide divergence. There is a great lack of uniformity and little evidence of any plan whatsoever in most of them. The fact seems to be forgotten that the reports are for the use and information of others not within the city itself. The good report has a very wide field. It enables others to see what methods are in use and the results obtained. It is a general clearing house of facts relating to sanitary methods. "You may be surprised to hear," said Mr. Gunn to the audience that he was addressing, many of them the officers that had prepared these very reports, "that in 24 of the 56 reports there is no hint of the population; this omission being observable in half the reports from Massachusetts." In the classification of deaths no regular system prevails, although there is an international one in use throughout the world in the larger cities. The smaller ones often adopt an alphabetical arrangement. It is a sad commentary on the intelligence of a registrar when phthisis is set down in the p's and tuberculosis in the t's. One record gives six deaths from phthisis and 37 from tuberculosis, and in other diseases it is not infrequent to find the several names of the same disease recorded as if they were different ones. According to one statement, out of all the contagious diseases reported to the health officer there were only three deaths, but two pages later one may find in the tabulation four deaths from diphtheria, seven from typhoid fever and ten from pulmonary tuberculosis. Such things ought to be impossible in an official report even from a small city.

Mr. Gunn found that birth statistics and infant mortality figures are usually entirely omitted. "I was not able in any of the reports to find statistics that would give the number of deaths of infants under one year of age per thousand births. This deficiency, by the way, is not confined to the reports of the smaller cities. For another investigator of two years ago could find among the large cities of the country the

corresponding figures for not more than a dozen in all.

Financial statements of the expenses of the health departments were found in 32 reports. "We must tell how much, or, perhaps more often, how little we spend," said the speaker; "other cities need this information. The salaries are often lumped; they should be given in detail. We ought to let the people know how little we pay the officials that are guarding our health."

As the last item in a comprehensive report, Mr. Gunn considered the relation of the health office to popular education in health matters. It is persons rather than things that are the chief causes for the spread of infectious disease. Contact infection is coming to be considered the most important means of infection, and in order to combat this method there must be better education and a better understanding of how disease is distributed. This can be accomplished only by progressive boards of health that constitute themselves missionaries of the gospel of sanitary living.

Rockefeller Maps of the Hookworm Belt.

Interesting maps are a feature of a report of the administrative secretary of the Rockefeller Sanitary Commission, which is operating with the Tennessee Board of Health in fighting the hookworm. These give the result of a superficial study of the distribution of the hookworm. It has gone to work more systematically in the southern states than elsewhere and, therefore, there are more marks in the maps of counties in the southern states to indicate the contagion than elsewhere, but there is not a continent without telltale signs, referring to official information that has been gathered by other experts. South America, Cuba and the other islands of the West Indies, Mexico, Central America, England and other parts of Europe, practically every part of Africa and the whole of Southern Asia from India to Corea, are included in the hookworm belt. Australia and the islands of the Pacific are also known to be infected.

Another noteworthy fact mentioned in this report is that Florida had begun a systematic campaign against the hookworm before the Rockefeller commission was organized. That state appropriated liberally for the work of the Board of Health, and it has been able to do more

effective work in enlightening the public about the causes and the cure and the prevention of hookworm than any other.

A Philadelphia Warning Against Trichinosis.

Dr. Joseph S. Neff, director of the Department of Public Health and Charities, Philadelphia, has made a report calling attention to the fact that there were lately a number of cases of trichinosis reported to the bureau of health, including one death from the malady. He warns the public against the eating of meats, particularly pork, which are not thoroughly cooked, and also describes symptoms by which the disease may be recognized.

Dr. Neff says: "Trichinosis is a disease caused by the eating of meat — particularly pork and sausage — containing a parasite, or small animal, which lies coiled in the muscular fibre of the meat. Their entrance into the human body is made known by a variety of symptoms well known to physicians, which cause extreme exhaustion and in most cases death. The disease appears only in those individuals who do not properly cook their meats. Such persons are advised, therefore, to thoroughly cook all pork products, which will eliminate all danger from this parasitic disease.

"All cases of this disease found in Philadelphia have been carefully studied, and it has been found that the pork partaken of by those ill with the disease came from western packing houses, concerning which the United States Government has been notified. It is believed that this meat has been sold particularly in the southeastern section of the city."

The Illinois Commission on Occupational Diseases.

The report of the Illinois Commission on Occupational Diseases, recently made, is an important contribution to the literature of industrial hygiene. While other parts of the continent have made some inquiry into industrial accidents, Illinois is the first state to take up the study of industrial diseases. The commission has had only ten months in which to work, but has submitted an epoch-making report.

Limited time and funds made it necessary for the commission to restrict its work

to poisonous trades, those studied being the lead trades, brass and zinc trades, and trades involving exposure to carbon monoxide. The report on the lead trades shows that lead poisoning is probably the most important industrial disease to be found in Illinois. Twenty-eight trades in which lead poisoning occurs were found, including painting, plumbing, making of storage batteries, manufacture of paints, polishing, cut glass, handling of lead-colored wall papers, etc.

In one Illinois factory employing 142 men, partial inspection showed 25 suffering from lead poisoning. In a factory employing 94 men, 20 per cent. were poisoned. The report on the brass industry showed that brass founder's ague is comparatively common except in well ventilated foundries. Only four out of 89 factories visited were found to be free from this disease. The most startling effect of this disease is the shortening of life. Out of 1,761 brass founders, only 17 were over 50 years of age.

Carbon monoxide poisoning exists in steel works, being due to exposure to gases generated during smelting. An examination of 240 workmen in steel plants showed most of them to be in poor physical health and deficient in muscular power. Blood examinations in 68 cases showed abnormal blood conditions in practically all.

The state law bearing upon this matter and which has recently been enacted, aims to protect employes in occupations that subject them to illnesses and diseases incidental to their trade, and provides that:

"Employers shall provide practical working clothing for men who come directly in contact with poisonous materials, fumes or gases.

"Employers are required to provide respirators for the prevention of inhaling poisonous dust.

"Examination of the employes shall be made at regular intervals by competent physicians to ascertain whether any occupational or industrial disease exists.

"The factory inspector shall require the installation of approved devices, means or methods, reasonably necessary to protect the health of the employes.

"Dressing rooms and laboratories, separate from the workshop, shall be maintained for the use of employes or those exposed to poisonous fumes and dust.

"Proper washing facilities, hot and cold

water, clean towels and soap; and lockers shall be provided, so that the ordinary street clothes of the employees shall be kept separate from the working clothes. This is to prevent them from carrying poisons to their homes.

"A separate room shall be provided for the employees to eat their meals, so that so that they will not keep their food or eat their meals in rooms where it might be poisoned by dangerous acids, poisonous substances or injurious gases.

"Where practicable, the installation of approved devices for carrying off all poisonous or injurious fumes or gases from any furnace shall be installed.

"A proper system of sweeping is required where poisonous dust collects upon the floor.

"The floor shall be constructed and maintained in smooth and hard condition, and sweeping is not to be permitted during working hours.

"The employer shall post in a conspicuous place in every workroom where the dangerous process is carried on, appropriate notices of the known dangers to the health of the employees engaged in the dangerous processes, and simple directions of the means of avoiding serious consequences thereof. The board of health and state factory inspectors are to prepare these notices.

"The state factory inspector is to enforce the law. Violations are punishable with a fine of \$5 to \$100 for the first offense, and \$50 to \$200 for the second offense.

Church Deaths from Tuberculosis in the United States.

Relating to the poor ventilation of the majority of churches, statistics showing how serious a problem tuberculosis is to the ordinary church congregation, have been sent to us by the National Association for the Study and Prevention of Tuberculosis.

From reports received from over 725 churches, with a membership of over 312,000 communicants of twenty denominations, and from 208 cities and towns in twelve States in various parts of the country, out of nearly 7,000 deaths in 1910, over 700, or 10.4 per cent., were caused by tuberculosis. This means 2.24 deaths for every thousand members or communicants.

While the percentage of deaths from tuberculosis as compared with other diseases is not higher in the churches, according to these figures, than in the country at large, the tuberculosis death rate, as shown by the church returns, is higher per thousand communicants than that for the general population in the registration area of the United States, which the census bureau gave as 1.67 in 1909.

The National Association does not, however, consider the statistics received from

ministers comparable from the point of view of accuracy with those reported by the Bureau of the Census. A sufficient number of returns from a great variety of churches have been received, nevertheless, to indicate that one of the most serious social problems the ordinary church has to consider, is that of the devastation of its membership by tuberculosis. The need for education from the pulpit and in the home is apparent. Every minister is asked to give this subject some attention.

THE EMPIRE AND THE WORLD ABROAD

Great Britain and the Rats.

Great Britain is asking the world to join it in a war for the extermination of rats, suggesting that a rat day be set aside each year and the activities of the civilized world devoted to the fight against the property-destroying disease-spreading rodent. This proposition has met with some favor in Parliament and an effort is to be made to make the plan world-wide.

Scientists in Great Britain have been studying the situation and have reached the conclusion that each rat destroys one cent's worth of grain or other property each day in the year, and, while no accurate rat census has been taken in the United Kingdom, the annual property loss is placed at \$75,000,000 in that country. A magazine writer recently placed the loss in this country, from the depredations of rats, at \$100,000,000 a year. He placed each rat's share to this contribution at 20 cents a year, instead of 36 cents a year allowed in the figures of the British investigators. There's a question, of course, whether the British rat has a better appetite or whether his food supply comes with less exertion than in the United States.

Jokes and the opinions of scientists aside, it has been established beyond question that rats spread the bubonic plague in San Francisco, and they have been tried and found guilty of being common carriers of other less dreaded but equally menacing diseases. They have deserved the death penalty for ages. This century should inflict it, in view of the work of

scientists in proving the rat a menace both to property and health.

Public Health Administration in South Africa.

There has lately been published the text of a bill abolishing the offices of medical officers of health for the four provinces of United South Africa, also the Natal Board of Health, and for empowering the appointment of a medical officer of health for the union, with such number of assistants as may be found necessary. It provides that these should hold registrable medical qualifications, but not for their holding a public health diploma, an omission which, as the *South African Medical Record* has properly pointed out, surely ought to be rectified.

An English Circular on Measles.

In Stepney, England, a special circular has been issued, in which Dr. Thomas, the Medical Officer of Health, warns the public that "Measles is the most dangerous of infant ailments, and causes more deaths than all the other notifiable fevers put together." The circular then continues:

Measles is highly infectious from the commencement of the attack and remains so for four weeks. No child should be deliberately exposed to the infection of the disease.

It must be clearly understood that it is

not "necessary" for children to have measles, and if they can be saved from having it until they are five years of age they are not liable to have it at all.

Measles begins with symptoms of a severe "cold," watering of the eyes, running of the nose, pain in forehead, and irritable cough. At this stage, even before the rash appears, the disease is extremely "catching."

Do not wait until the patient is dangerously ill before calling in a doctor.

Isolate the patient as early as the disease is suspected.

Keep him in bed as long as there is any fever, being careful to protect him from draughts and chills. The latter precaution should be continued for some time after apparent recovery. The patient's chest should be specially protected by flannel or cotton wool.

Watch all children in the family, and isolate them as soon as they show any signs of illness.

The great danger in measles is the tendency of the cold to spread to the lungs, so all exposure to cold must be avoided.

No child from an infected house should be allowed to go to school, or to associate with the children of other families, until the premises, etc., have been disinfected, as measles is easily conveyed by the clothing of persons, not themselves attacked by the disease.

One of the most necessary of warnings given in the document is that which indicates that it is not "necessary" for children to have the disease, inasmuch as it is a very general belief that the normal child is bound to have measles, and the fact that this is also accompanied by the belief that the sooner a child has it the better, is no doubt responsible for a considerable proportion of the deaths due to the disease, which is most fatal to children between one and two years of age.

Such circulars as that quoted above cannot but do good, especially as suggesting certain of the more obvious precautions necessary for preventing the spread of the ailment after it has been discovered to have laid hold on a patient

Typoid in Tasmania.

There are some parts of Tasmania where typhoid has given considerable trouble, and the Chief Medical Officer does not

hesitate to make the fly and kindred insects the principal agents in spreading infection, but reports that there are other causes, especially in mining districts, where sanitation is of the very crudest form. At present, he says, there is considerable difficulty in dealing with new mining fields with a view to prevent them becoming hotbeds of infection. The haphazard growth of a settlement under which each resident is a law unto himself, the question of the permanency of the field or of rating, besides the absence or direct supervision, are factors causing the usual insanitary conditions, not to mention the carelessness of some of the miners themselves in the disposal of excrement and the selection of water supplies. As the police generally have the issuing of occupation licenses, the co-operation of the Commissioner of the Police has been sought and given. The sanitary condition of the hotels are thereby brought into line with those in other districts, and the local constable assists in keeping the residents mindful of the necessity of observing sanitary requirements as far as practicable. The need for this is very real. In one outbreak it was found that most of the victims had taken food at a particular hotel, and that this place obtained its water supply from a well near two unused cesspits. Flies were also noticed travelling between the foul muck-heaps of the yard and the places where food was kept. Once get a typhoid "carrier" in such a district as this, and there is no limit as to the possibility of infection. The carelessness of human beings has often been the cause of epidemic in places less favored than Tasmania, and the same reason appears to prevail in that country, held up as one of the few perfect health spots of the world.

Native "Compounds" in South Africa.

A few years ago the newspapers had many stories of the awful condition of the "compounds" in the South African gold and diamond fields. They were dirty, unwholesome, insanitary, and everything that was bad. But time has brought its changes, and as municipal life has become established considerable improvement has been made. In his annual report the Chief Sanitary Inspector at Krugersdorp tells us that in 1910 a radical change has taken place for the better in connection with the

housing of natives. "On nearly every mine throughout the municipality considerable alterations have been effected, whilst the action of the Randfontein Estates erecting three new colossal compounds capable of accommodating some 13,000 natives augurs well for the future welfare of the inmates. The construction of these gigantic compounds are of brick under iron roof, impervious floors, adequate heating, lighting, and ventilation, together with regulation iron bunks, all of the above being in strict conformity with the Colored Laborers' Health Regulations. The sanitary arrangements are of the most approved pattern, and this department is fully cognizant with the amount of attention and good work the company referred to has displayed in carrying out our wishes. By restricting the areas on which married native quarters can be erected a material change for the better has been effected, as each company now makes provision in this respect, and thus discontinues the haphazard manner in which buildings were previously erected. The enforcement of municipal health regulations in such a widely-scattered district as this is not effected without a considerable amount of hard work, taking into consideration that housing accommodation is required for some 33,500 colored inhabitants, and to prevent overcrowding is no easy task." We may not like the idea of the "compound" system at home; but we do not altogether realize the conditions prevailing in the goldfields, and we must rest content with the knowledge that health and decency are promoted in every possible way.

Edinburgh and Free Anti-Toxin.

Dr. Williamson, the Medical Officer of Health for Edinburgh, submitted a report to a meeting of the Public Health Committee of the town council last month on the subject of the distribution of diphtheria anti-toxin. Some time ago the British Local Government Board suggested that anti-toxin should be supplied free by Local Authorities. Dr. Williamson reported that it should be supplied free of charge to the medical profession in Edinburgh, to be used in cases occurring in their practice. He further suggested that "swabs" should be obtained from the throats of persons who had been in contact with diphtheria

cases, so that they might be examined. The Committee agreed to recommend the free distribution of anti-toxin, and to call the attention of medical practitioners to the facilities arranged for examination at the Usher Institute.

Bradford Sanitary Association and the Pollution of Swimming Baths.

About a generation ago an English traveller in the far interior of Morocco took to himself a signal rebuke from a chief of ancient lineage whose roof and hospitality he was sharing. Forgetting where he was, he urged the need of some vessel of water in which to perform his morning ablutions. Whereupon his host, having none, took him out into his garden, and pointing to his own lavatory — a natural rivulet falling melodiously from a spout into a clear pool—"No Moorish gentleman," said he, "would cleanse his face with water into which he had first discharged the dirt from his hands, when he could get the pure running stream." All depends on custom and the point of view. One man's meat is another man's poison; and he who wonders at the dirt in a Bedouin's faded and weather-stained robes, may himself be the wonder of its bearer, who, in the sun and wind of the spotlessly clean desert almost the livelong day, purges himself by nature's toilet, while the stranger critic at home lives in a huge city (the "Wen," old Cobbett used to call it), breathing the noisome exhalations from the million, and to the Arab's untutored but clear vision cannot know what true cleanliness means.

We boast of the increasing crowds who disport themselves in our costly swimming baths, totally forgetting that while the crowd is unlimited the water in which they bathe is extremely limited; that before the first day of its use it is often no better than dilute sewage; and that one, two, and it may be even three days' service in the purification (so-called) of dirty bodies are demanded of the same filling, at whose bottom next morning may be seen through the still pool the white tiles covered with a dark coat of sediment not seen before the crowd had "cleansed" themselves in it. No doubt in many cases the extreme foulness is partly caused by the many who regard the weekly, monthly, or yearly swimming bath as the only place for purifying the body; but apart

from this the fouling is great. From swimming baths two great benefits should arise besides the fine virile exercise which itself is of the greatest value. First, the art of swimming, which all should possess; and second, the purification of the skin and pores; and bad as the pollution is, some substantial balance of good results from the whole equation. Yet as a purification of the body this method cannot be approved.

Mr. Pearce, of Batley, Medical Officer of Health, has conclusively demonstrated this in an excellent paper contributed to the *Lancet* in September last during the warm dry weather. He shows that there is manifest danger of infection from the use of such polluted bath water. The germs of disease, such as diphtheria and consumption, may be got by bathers to whom the commonest occurrence is the forced swallowing of the fouled water by mouth and nostrils. He has noticed sore eyes in children arising through bathing in infected water, and states that the bath manager at Batley has found the *pediculi capitis* in numbers in the towels after use and in the dressing boxes. He suggests that something should be done to keep verminous persons from using the bath, and that it would be useful to enforce the use of bathing caps by girls. The best remedy, he thinks, would be to exclude all persons not in a state of bodily cleanliness. Here we may ask how far this would go. The real question is, we take it, not only the dirty bathers, but the overcrowding and the use of the polluted water day by day. The cleanest bathers externally are not always continent of the contents of their bodies, and spitting and expectorating cannot be suppressed. Moreover, the air itself in so confined a space as a covered bath becomes fouled, and mingles with the water. In the selection of bathers lies no real remedy of a practicable kind for what is a gross pollution. Outdoor bathing in the canal or a running stream of water agriculturally pure would give reasonable immunity from infection. It is found in many places, as at Oxford, Cambridge, Bedford, and other places where a fine river is at the disposal of the citizens; also for the accommodation of a small part of a great city, Leeds has set a praiseworthy example, which it is to be hoped will be multiplied, by making a large open-air bath at Roundhay Park, with the water of

its rivulet flowing continuously through it; and Sheffield and other places are bringing into use similar clear streams within or near their boundaries.

Where this cannot be done, the authorities must look the matter in the face and forthwith stop all overcrowding by a fixed limit to the number of boxes, the refilling of the baths daily, and the strict suppression of all soaping, washing, and expectorating in the bath. These will mitigate, but not abolish, the evil.

Meanwhile, all authorities who feel they can afford it in these days of heavy rates and high standards of valuation should, as far as possible, follow the example of Belfast, which as yet offers no sign of stagnation in its wonderful progress. The corporation have installed the rapid filter plant in their three swimming baths. Two of these are open-air pools artificially supplied with water. These have not been completely emptied and re-filled since the filtration was started a year and a half ago, the only water that has been added being that necessary to supply loss by evaporation, etc. The water, nevertheless, has maintained its brightness, purity and freedom from peat or other color. The process of supply is continuing during the time the baths are in use by pumping out 8,000 gallons per day of used water into the filters. This filtration is reinforced by the special "Rapid" system of chemical precipitation now well known, which operates within the filter, and is claimed to deal efficiently with not only very fine organic impurities, but with the bacteria themselves, which are destroyed.

Report on African Sleeping Sickness.

The results of further experiments made by Colonel Sir David Bruce and his expedition in regard to sleeping sickness were placed before the British Royal Society recently at a meeting presided over by Sir Archibald Geikie in London. In the absence of Sir David through indisposition, the results were summarized by the Secretary (Dr. J. R. Bradford), who said that experiments had shown that the results of injecting extract of infected flies were similar to those obtained by allowing the flies to transmit the malady directly by biting the animal. That is to say that for the first two days after the fly became infected it was capable of transmitting the

disease. Then for something like 20 days the fly was unable to do so. Then for a prolonged period, the limits of which had not been ascertained, the fly was again capable of transmitting the disease. Other experiments were made to ascertain whether the blood of natives who were under the arsenic treatment (which had at any rate a controlling influence on the disease in prolonging life) was capable of transmitting the disease through a fly. It was suggested at one time that the arsenic might prevent patients from being such dangerous factors in spreading the disease as untreated patients. The experiments showed, however, that flies feeding on such patients might also become infected and transmit the disease.

German Peasants' Physique.

An interesting report on the economic condition of Germany's agricultural class has been published by Dr. J. Kaup under the title "Nourishment and Vitality of the Country Population."

The report contains a great mass of statistics and explanations by the author, from which it appears that the physique of the large German peasant class is steadily deteriorating owing to inferior nourishment. This, as a general fact, is not new, but its exact extent has hitherto been doubted. Judged by the army test, the urban population also as a whole decreases in physical efficiency; but it appears that in certain individual army corps districts where there is no proven physical deterioration in the towns, there is a marked deterioration in the country. Between 1902 and 1908 the percentage of physical efficient among men of agricultural class resident in the country fell from 60.5 to particular provinces.

A further sign of unhealthy conditions in the country is that infant mortality despite better education and hygiene, has as a whole not fallen; and that in some districts it has even increased. Also the birth-rate in the country, particularly in Prussia and Thuringia, falls off, while the death rate diminishes more slowly than in the towns.

According to Dr. Kaup, these and many other unsatisfactory phenomena are due to the deterioration in the feeding of the country population. This is not necessarily due to a falling-off in general prosperity, but to the fact that in the last two

decades the peasants have taken to selling wholesome products produced on their own farms, and consuming instead surrogates, colonial wares, alcohol and other products of small food value. The inducement of high prices for milk and dairy products has resulted in the farmers consuming less milk; and to this is attributed the unfavorable infant mortality rate.

In Brandenburg, Westphalia, Saxony, Schleswig-Holstein, and the Rhine province, the consumption of milk by drinking among the peasant producers has fallen to a minimum; surrogates have almost entirely replaced butter; and the once favorite dishes made with milk have vanished altogether. The money received by farmers and peasants for the milk which they refuse to consume goes on products of little nourishing value, hence a general decline of physique. This decline is so serious a problem that there are even social reformers who propose that the State should forbid the peasants to sell their milk until they have first properly fed their children.

As such State interference would probably have no result, Dr. Kaup attacks the Protectionist system which is the cause of the evil; and points to England as a model for imitation. He points out that the British system of freedom of import for food is the only way of ensuring the sufficient supply of milk which is absolutely essential for the health of the population. During the last twenty years the import of butter into England nearly doubled, and the result is that no strain is put upon the native milk supply, and that four-fifths of the milk production is consumed for drinking, much to the benefit of the population.

Germany, owing to the taxation of food products, is unable to get a cheap supply of dairy products; and this results in the native dairy farms having to supply milk both for butter and for drinking. The high prices which result make it increasingly more difficult for the rural population to consume the milk they produce; hence the serious deterioration in physique, high infantile mortality, and other unfavorable phenomena with which Dr. Kaup deals.

Royal College of Surgeons, England.

The quarterly meeting of the Council of the Royal College of Surgeons was held

last month, the President (Mr. Henry T. Butlin) presiding.

The Walker prize of \$500, founded to encourage investigation into the pathology and therapeutics of cancer, was awarded to Dr. Ernest Francis Bashford, General Superintendent and Director of the Laboratory of the Imperial Cancer Research Fund of London.

The committee appointed by the Council to recommend for the prize, reported that they had received valuable advice and assistance from eminent American, German, French, Italian and British surgeons and pathologists regarding the work carried out in their respective countries, and had made careful examination of works and papers on the pathology and treatment of cancer written in various languages during the last five years.

In recommending Dr. Bashford for the prize, the committee drew attention to the actual amount of the work carried out during the past five years under his direction, to its systematic character, and to its far-reaching extent, in that it critically tested all the questions relating to the pathogenesis of cancer as they have arisen during this period. They also reported that many important results have also been obtained confirmatory of the work of other observers or materially extending it, and mentioned the valuable assistance which Dr. Bashford has given to investigators, whether British or foreign, outside the laboratory of which he has charge, by the unreserved manner in which he has placed material at their disposal.

The Cartwright prize, consisting of the Cartwright medal and £70, was awarded by the Council to Mr. Henry Percy Pickering, M.B., L.D.S.Eng., Professor of Dentistry and Director of the Dental School at the University of Otago, New Zealand, for his essay on "The Prevention of Dental Caries."

This prize, which is awarded every five years, was founded by the Association of Surgeons Practising Dental Surgery to commemorate the services of the late Mr. Samuel Cartwright, F.R.C.S., who induced many dentists to become fully qualified surgeons and helped to obtain the institution of a license in dental surgery by the Royal College of Surgeons. The subject for the prize for the five years ending 1915 will be "Oral Sepsis as a

Factor in the Causation of General and Local Diseases.'

The Jacksonian prize was awarded to Mr. K. Macfarlane Walker, F.R.C.S., of St. Bartholomew's Hospital, for his essay on "Tuberculous Disease of the Urinary Bladder and Male Genital Organs."

The subject for the prize of 1912 will be "The Embryology and Treatment of Cleft-Palate."

A vote of thanks was given to Mr. Frank Corner, M.R.C.S., for some gifts to the museum and for his services in helping the conservator to acquire specimens, and Mr. Henry Cecil Wilson was appointed assistant prospector in the museum.

Dr. Andrew Wilson's Maidstone Lecture on Germs.

Lecturing at Maidstone, England, recently on the above subject, Dr. Andrew Wilson said that to a large extent the term microbe had a certain gruesome sound, but there were microbes which were good, necessary and essential. Whether we liked them or not, we had them in the world around us, and the work of science was to modify them in the service of man, thus enabling them to discharge useful duties to humanity. In the past we struggled against disease, but did not recognize its cause until the germ theory was discovered. Some 300 years ago there existed a society in Florence for the culture of science, medicine and general knowledge, and one of the subjects debated was "Where did the maggots come which were found in putrefied meat?" Redi demonstrated that they could not come from the meat, because life could only spring out of life, and further experiments showed that no case of infectious disease ever arose out of nothing. Thus had we been taught that every case of consumption, scarlet fever, and typhoid had arisen out of cases that had gone before. This was the great lesson for the world to get hold of, because if we took care of the first cases of any disease we prevented it from multiplying into thousands. He asked them, as sensible men, to think what this meant in the saving of pain, misery, money—which was the least thing—and death. The researches of Redi 300 years ago placed in the hands of the sanitary authority the means of preventing disease, saving life and increasing the sum

of human happiness. Answering the question of what were germs, Dr. Wilson described them as probably the first forms of life to come into existence when the earth cooled down from being a blazing orb. All germs were not evil things; some, indeed, were useful to man. He did not know whether Maidstone citizens took a practical interest in their sewage farm, because germs, called bacteria, were there converting filthy masses of sewage into an effluent so pure that it could be drunk with safety. Again, neither cheese nor the best vinegar could be made without the action of germs, while the work of digestion of food in our own bodies could not be accomplished without their aid. In the course of further interesting information, Dr. Wilson urged the importance of purchasers consuming tinned foods as soon as possible after opening; of brushing the teeth every night in order to get rid of the matter which had congregated from the mastication of food during the day, and which formed a fertile soil for the growth of germs; and specially the necessity of isolating cats and dogs which appeared to be suffering from colds or other ailments, as they often communicated the complaints to the children. In regard to typhoid, he mentioned the singular fact

that some patients would retain the germs in their bodies for ten or twelve years. There were about three typhoid carriers in every thousand cases. If we were surrounded by germs, some might ask why we were not always ill. The answer was that all germs were not disease producers, while the body possessed many defences against infection, including the millions of white globules in the blood, which acted as sanitary policemen and were always on the watch for disease germs. When a person became infected it was because the germs were too many for the globules to bolt. Speaking of the bubonic plague and the crusade against rats, he said the disease was caused by a person being bitten by a flea which affected rats abroad and not in England. He suggested that attention should be concentrated upon the rats which were conveyed in ships. As to consumption, he mentioned that one patient would cough up twenty million germs in 24 hours. In conclusion, he dealt with the subject of toxins and anti-toxins, which he described as the crowning triumph of germ science, and contended that the future of medicine would largely consist of providing for every disease an anti-toxin, and making the germs fight themselves.

