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MISSING

Nature is universal hygiene. All animals are scrupulous in hygiene; the elebarotion of hygiene moves *pari passu* with the rank of a species in intelligence. Even the cockroach, which lives on what we call filth, spends the greater part of its time in the cultivation of personal cleanliness. And all social hygiene, in its fullest sense, is but an increasingly complex and extended method of purification—the purification of the conditions of life by sound legislation, the purification of our minds by better knowledge, the purification of our hearts by a growing sense of responsibility, the purification of the race itself by an enlightened eugenics, consciously aiding Nature in her manifest effort to embody new ideals of life.—*Havelock Ellis.*

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Special Articles

THE SANITARY ASPECT OF A BESIEGED TOWN

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There is no condition of circumstances where the medical situation, both civil and military, has such an important bearing upon the general military issue at stake as when a town, city, or fortress is besieged.

All wars do not produce seiges, but the experience of recent wars shows that sieges may be expected, and will have a most important strategical value.

When a town or city is surrounded, cut off from the outside world, and forced to depend on its own resources the sanitary situation becomes one of immense proportions.

The locality may have been sanitary. All that modern device or knowledge can do may have been done to bring about sanitary perfection. Everything changes under these altered conditions till eventually the safeguards of sanitation cease to exist or become ineffective, and, as a result, we have sickness and death, not only amongst the military, but also amongst the civil population, including the old, the women and the little children.

We might find it profitable, as officers of the Sanitary Service of the Militia, to study the subject of sieges from the standpoint of public health.

Siege warfare is primitive warfare—differing only in the character of weapons and engines of destruction used in various ages. There is only one weapon that never changes, the weapon of insanitation. The besieger endeavors now, as he has always endeavored, to render the besieged town so insanitary that existence will no longer be possible for the civil and military population of that town.

This state of affairs may be brought about by cutting off the water supply, or by making it impossible for the besieged to get rid of excreta and refuse of all kinds. As a result of the siege a general state of misery, discomfort and poverty may be produced, predisposing to epidemics of all kinds.

During the past fifty years the civilized world has seen many sieges. Read the personal accounts of these and you will see no difference between them and the sieges of the middle ages. The same sickness and dire distress; the same object of the besieger, to make the particular area of land represented by the beleaguered town unfit for human habitation. All classes and all people suffered, the guns were not levelled

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on the troops alone, but on the citizens, their property and belongings. In every case the insanitary condition brought about by the efforts of the enemy, was the cause of capitulation, or of a feeling that unless relief came surrender must be the inevitable result. Modern armies do not poison wells, but they do cut off water supplies. The water supply of Port Arthur was cut off when the Japanese took the villiage of Shui-shih-Ying in September, more than four months before the capitulation. This severing of the main artery of the city must have been an important factor in determining the issue of the siege. It does not take much imagination to picture the condition of affairs in a watered and sewered town where the water supply is cut off. Wells may be abundant, as they were in Port Arthur, because the introduction of piped water was recent, but these wells have been in disuse and are often contaminated, and though, if pure, may supply drinking water, can never supply cleansing or flushing water. Some of you may remember what happened in Quebec at the time of the Tercentenary when the water was off for less than three days. In one battery alone the use of well water as a substitute, produced fourteen cases of enteric.

The presence of modern sanitary conditions in a fortress city is an element of danger. In Quebec, one of our fortresses, the condition is exactly the same as Port Arthur. There is no doubt but that an enemy besieging Quebec would endeavor to cut off the water supply from Lake St. Charles. The very fact that the water pipes and sewer pipes have been in Quebec for now many years, would make the sanitation even worse than it was at the time of its famous siege a century and a half ago. The water supply cut off and the sewers useless, produce a condition which is aggravated by the general unsanitary surroundings. The people are crowded in certain areas of the town, probably increased in numbers, their movements are restricted, a congestion is produced when buildings, dwellings, and, perhaps, whole areas become untenable. The last great siege on this continent was just fifty years ago when Vicksburg was surrounded and finally captured by General Grant. The citizens of that town were obliged to resort to the safety of caves cut out in the high clay banks, here they found safety from the bombardment and lived in security, if not in comfort, for many months, and were safe from the shells of the navy which were dropped into the city, night and day, without intermission. Can we picture the sanitary condition?

Starvation and improper food are used by the enemy as his most potent weapons. The heroic deeds of the inhabitants of besieged towns, enduring the awful sufferings of hunger, seeing their children and their sick suffering in the same way, these deeds form the most inspiring theme of history, modern or ancient; it is all the same, the besiegers aiming at one object, the besieged suffering the one misery. The price of food rises high beyond the purse of the majority. Even in Port Arthur, where there was sufficient of certain foods, the price of an ox was $350; a pig, $150; a fowl, $7; an egg, 50c. Fresh vegetables and fruit were soon exhausted; the result was disease. The disease chiefly apparent was scurvy; the prevalence of this disease was the main ostensible cause of the capitulation. Lynch says that no opportunity for the study of scurvy for years to come will approach that given at Port Arthur. It is more than a point of interest to consider what might have been the bearing on the final outcome of the war if the sanitarians had taken the precaution to have seen that a needful supply of a prophylactic, such as lime juice, was provided for the garrison of Port Arthur. Other causes help and the result is a city stormed and captured by infection and death. This is a condition of war, a new condition, and all efforts of the sanitary service must be directed towards its prevention and remedy, and, as most sieges end because the sanitary state renders life impossible, and not because of bombardment, we might almost say that the sanitarian is the first line of defence, and that the soldiers in the forts and trenches are only holding the human enemy so that he, the sanitarian, may conquer the strongest and most virile enemy—disease—and so conquering make the fortress impregnable.

SEWAGE DISPOSAL BY OXIDATION METHODS

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The scientific solution of the sewage problem will not be attained until the following results can be guaranteed for any given case:

(1) An effluent which will not deteriorate the stream into which it flows.

(2) No nuisance in the course of sludge disposal.

(3) No nuisance from smell or from flies in connection with the filter-beds.

(4) An expenditure strictly proportionate to the sanitary and æsthetic results achieved.

Those of widest experience will be the least ready to say that these criteria of success are at all commonly fulfilled.

It may not be uninstructive briefly to consider these four directions of effort, with the object of seeing what has been satisfactorily accomplished, and what yet remains to be done.

Effluent.—The success of a works is most frequently judged entirely by the effluent produced, generally in accordance with some more or less recognized standard of purity.

The question of standards is too large a one to enter upon here, more especially as the Royal Commission on Sewage Disposal is shortly expected to issue a report upon the subject.

Taking a broad view, it is probable that the criterion of purity suggested above—*viz.*, an effluent which will not deteriorate the stream into which it flows—is a comprehensive and practical one. It allows for some advantage to be taken of dilution, if the volume of the stream be large in proportion to the volume of the effluent; it ensures an automatic speeding up of authorities down stream, as those in the higher reaches, who have the initial advantage of clean water, do their duty; it is, in fact, in accordance with the judgment in famous recent "Birmingham v. Tamworth" case.

The principle of judging an effluent by its effect in the stream into which it flows has many advantages. It is exceedingly difficult to obtain a true average sample of the effluent from any sewage works. Conditions vary from day to day, and, indeed, from hour to hour. Land areas may have been recently ploughed, and the effluent for an hour or two may be distinctly unsatisfactory; a sudden storm may push strong tank effluent through filters at a rate too great for efficient purification, or over the storm overflows without any treatment. Unless systematic sampling at short intervals is undertaken, either as part of the work of the staff or by means of mechanical devices, many of these incidents will escape notice. Snap samples often give, on the other hand, either too good or too bad an impression of the character of the effluent.

But the character of the stream below the outfall is a permanent and, on the whole, a fair witness. Where gross obvious pollution is not in evidence, a body of knowledge is being obtained to the various forms of life which indicate good or insufficient purification. It is surprising how a small amount of unbroken-down organic matter in an otherwise well-mineralized effluent will encourage the growth of masses of fungus.

The idea of the fishpond as an extra line of defence before the final discharge of an effluent into a stream which has been successfully applied at many places in Batavia under the direction of Prof. Hofer, is well worthy of careful study.

A consideration of the effect of an effluent on the forms of life and growth in a stream leads to the important question of disinfection, a subject which has recently been so ably dealt with by Prof. Phelps.

There is one point which has, in the writer's opinion, not been sufficiently studied in this connection—viz., the possible effect of sterilizing agents on the micro flora and fauna of the stream, other than bacteria. A comparatively small dose of chloride of lime will inhibit fungus growth, as a small dose of copper will prevent the development of algae. It is worthy of further study whether the addition of chloride of lime to an effluent in sufficient amount to

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reasonably protect a water supply may not at the same time upset the balance of life on which the continued healthy condition of a stream depends. Speaking generally, it may, however, be said that of the four problems referred to the problem of the effluent has been carried furthest to a scientific solution.

Sludge.—The sludge problem is really the centre of the general sewage problem. The method of handling the solid matter, which in some form or other has to be separated from sewage, conditions the size and character of the filters, and the main question in the design of sewage works lies broadly in the allocation of expenditure as between sludge disposal and filtration costs. Thus, very perfect clarification of sewage by heavy doses of chemical renders possible great economy in filter construction and maintenance, while with adequate filter area it is possible practically to dispense with preliminary treatment altogether. How far expenditure is best incurred in one direction or another depends entirely on circumstances, and it is here that judgment and experience are called for.

Chemical Treatment.—The fifth report of the Royal Commission on Sewage Disposal was by no means unfavorable to chemical treatment in a number of cases. It may be doubted whether the dilute sewages resulting from the lavish use of water in American cities lend themselves generally to economical precipitation by chemicals.

The writer has had occasion lately to go somewhat closely into the question of precipitation of sewage, and has reached the following general conclusions—viz., that chemical treatment is to be recommended where the following conditions predominate:—

(a) Where sludge disposal is cheap.

(b) Where land for filters is restricted.

(c) Where filter construction is expensive.

(d) Where fall is limited for either coarse percolating filters or double contact beds.

(e) Where special trade refuse has to be dealt with.

Conditions (a) and (b) probably both apply in Glasgow and to a less extent in Salford. Condition (c) depends largely on facilities of transport, which vary within wide limits. Condition (d) obtains e.g., at Hanley and elsewhere in the Potteries. For shallow percolating filters of fine material, advocated, e.g., by Dr. Reid, chemical precipitaton appears essential as a preliminary. This is, as a matter of fact, achieved at Hanley by means of the "slip" or fine clay from the pottery works, which comes down with the sewage. Ordinary septic tank treatment is likely to be disastrous for such filters, causing rapid blocking. Condition (e) is exemplified at Wakefield, where, owing to the presence of wool-scouring liquors and other troublesome trade effluents, chemical treatment by lime and ferric sulphate has been adopted under the advice of the writer.

Of course, the main difficulty with chemical treatment is the disposal of the resulting sludge. Apart from its quantity, the fact that it contains a large proportion of precipitated soaps renders it unsuitable for use as a fertilizer, as it is not readily incorporated by the soil.

Should Dr. Grossmann's grease extraction process, now being tried at Oldham on a large scale, or the partial carbonization process now being taken up by Norwich and Huddersfield prove successful, even to the extent of disposing of the sludge in a satisfactory manner without additional cost, chemical precipitation may have a more extended use than was at one time thought likely.

Septic Tank Process.—The septic tank has not proved altogether the success as a solution of the sludge problem that was at one time hoped, but here, as always in considering the sewage problem, it is important that conclusions should not be too hastily drawn. The defects which have shown themselves in the ordinary septic tank process are a nuisance both from the tank effluent and the sludge, and an excessive quantity of suspended solids in the tank effluent.

The Emscher Tank.—The Emscher tank, concerning which much has been written of late, seeks to remedy these defects by quickly separating the sludge and effluent. The liquid portion of the sewage passes quickly through the tank in a fresh state, while the suspended solids drop through a

slot into a lower compartment, where the sludge is thoroughly digested under anaerobic conditions, the construction of the effluent through escaping gases and suspended matters.

The tank certainly appears to be successful in eliminating nuisance, both from sludge and effluent, and under certain conditions has manifest advantages. The Manchester Rivers Committee has recently decided to instal a trial Emscher tank at their Withington sewage works, where the sewage is dilute and purely domestic, and the present tank space, especially in weather, inadequate.

Nevertheless, it is well that certain difficulties inherent in the Emscher tank process should be pointed out.

In the first place the comparatively short time of settlement means that variations in the character of the sewage must be quickly reflected in the character of the tank effluent, and the filters accordingly called upon rapidly to accommodate themselves to fluctuating conditions. This is not conducive to developing the most efficient bacterial activity. These fluctuations will, of course, be accentuated if trade wastes are present in the sewage. One of the main advantages of the considerable time allowed for the sewage of Manchester to pass through the tanks at Davyhulme is that fluctuations of this sort get smoothed out, to a large extent at any rate, and the filters have a more equable task to perform. In some cases large tank space may be a bulwark against possible disaster, as when on a recent occasion an acid chamber gave way at a works in the city letting out many tons of vitriol into the sewage. The strong acidity of the sewage entering the tanks was, however, nearly neutralized by the mixing with the slightly fermented sewage present in the tanks, and the filters incurred no noticeable damage.

It appears to be recognized by the Emscher authorities that storm water, at any rate above moderate dilutions, will have to receive separate treatment, and ordinary stand-by tanks would still be necessary for this purpose, the sludge from which will have to be dealt with.

In any event the suspended matters which produce the sludge in the Emscher tanks are those which settle readily, say in the space of two hours. The colloids, such as are eliminated by chemical treatment, have still to be reckoned with, and the character and extent of the filter beds designed accordingly. In many cases this may mean that fine material cannot be used for constructing the filters and the alternative adopted of deep filters of coarse material, with the possible resultant nuisance from flies, referred to later.

A third consideration with reference to the Emscher tank has been forced upon the writer's attention through a small experiment in connection with the sewage of a public institution, where it has been possible to test a small Emscher tank and an ordinary septic tank side by side. Here the sewage was very strong, and, what is even more important, very fresh. In consequence, although an effluent free from visible solids and also from putrid odors was obtained from the Emscher tank, it was found on analysis to be less broken down than the effluent from the septic tank, and less readily oxidized by the subsequent filtration process.

In the controversy between the advocates of anaerobic or aerobic methods of treatment the essential biological and chemical reactions which must take place before nitrogenous organic matter is finally mineralized are often lost sight of by reason of incidental circumstances, particularly the dilution of the sewage and its alteration during its passage through long lengths of sewer. When strong fresh sewage has to be dealt with empirical conclusions drawn from ordinary town sewage cease to hold good. This is especially so with the strong sewages often met with in tropical regions, where high temperature may coincide with restricted water supply.

The writer's researches in latrine sewage in Calcutta in 1906 showed that preliminary anaerobic treatment in properly designed tanks gave better results than purely aerobic methods, and this conclusion has recently been confirmed by careful detailed experiments by Major Clemesha, sanitary commissioner for Bengal. These researches showed that the bulk of the suspended matter was best broken down in a separate inlet compartment to the tank, but that distinctly better results

were obtained the longer time the whole body of sewage took to pass through the tank up to a maximum of three days.

All these considerations would tend to show that the Emscher tank may need to be supplemented by some form of equalizing tank if the best results are to be obtained.

Slate Beds.—Some of the difficulties above indicated attach themselves to the Dibdin slate bed. The true function of this process does not seem to be very generally understood. The slate bed is not a filter in the sense of a percolating filter or contact bed, but rather an aerobic tank. The coarser suspended matters in the sewage deposit themselves, during the two hours' or so period of contact, on the surfaces offered by the slate, and are afterwards digested by multifarious forms of life flourishing under aerobic conditions. The effluent from the slate bed should be treated as a tank effluent, and filter space provided according to its strength in the usual way. In order that the filters may work to the best advantage it is probable that the provision of "humus" tanks between the slate beds and the filters is desirable. Such tanks will have the double advantage of retaining solids washed away from the slate beds and of equalizing to some extent the composition of the effluent passing into the filters. They have, the writer has heard, been adopted in a recent scheme for Marpenden.

The slate bed process has undoubtedly been successful in many cases in dealing with the sludge disposal portion of the sewage problem without nuisance. The process is somewhat handicappel by cost, and by the fall needed for the slate bed as a preliminary process when compared with continuous flow tanks, where the loss of fall involved is trifling.

The foregoing section will have indicated that the character of filter to be recommended, whether contact bed, coarse percolating filter or fine percolating filter, must depend, to a large extent, on the preliminary treatment used.

There are certain sewages where almost any kind of tank treatment is bound to result in nuisance. Especially is this the case where brewery refuse is present in the sewage in any large proportion. Considerable trouble has, for example, been experienced at Stratford-on-Avon from this cause, and treatment with lime and bleaching powder has had to be resorted to in order to minimise the smell in warm weather. At Burton, after heavy treatment with lime, the sewage is pumped direct on to land.

In such cases, either the slate bed method or direct treatment on filters of the Ducat type would seem to be called for.

Successful trials have been made at the sewage experimental station at Hamburg, under Dr. Dunbar, of the use of a layer of peat over the material of an ordinary percolating filter.

The writer is at present experimenting with this method in connection with the disposal of the sewage of Market Drayton, which is particularly strong and offensive. At the adjoining parish of Little Drayton a Ducat filter has been in successful operation for many years, and has been reported upon by the Royal Commission.

Filtering Materials.—The type of filter apparently most in favor in America, and also to a less degree in England and in Germany is the deep percolating filter of coarse material. It admits of the passage of large quantities of sewage without blocking, and eventually discharges as so-called "humus" a considerable proportion of the collodal matter applied to it. Consequently it is, for practical purposes, everlasting. Filters of this type have been at work successfully at Accrington since 1898—i.e., for fourteen years. Unfortunately, the spraying of anything but fresh tank effluent on these filters is attended with considerable nuisance from smell, and whether the tank effluent be fresh or septic, the development of insect life, particularly flies and spiders, is often extraordinary. Instances could be cited of spray jets completely blocked with twisted spider webs, of ropes of web-like scarves from filter to filter, or small flies nearly covering the doorway of a cottage half a mile from the works, and so forth.

However good the effluent from such filters, and however economical their construction and maintenance, it cannot be said that such a process meets all sanitary and æsthetic requirements.

Experience shows that the fly trouble is minimized if the surface layer of the filters is of fine material, and this was one of the reasons for adopting a fine surface layer in the new filters at present under construction at Wakefield. Such a fine layer presupposes, of course, good preliminary clarification, or a somewhat restricted flow, and again the balance of advantage has to be considered.

There can be no doubt that the main advantage of the contact bed lies in its freedom from nuisance.

There have been no complaints or causes for complaint in connection with the 100 acres now in operation at Davyhulme, or with the 40 acres or so now installed at Sheffield. The cost of maintenance of these beds has not been excessive, even with a thorough washing and partial renewal of the medium every five years. Incidentally it may be mentioned that the "slurry" washed out from the filtering medium after pressing with lime, drying and grinding, finds a ready and profitable sale for direct use as a fertilizer of moderate strength, or as a basis for the manufacture of high strength fertilizer.

The economical and the scientific solutions of the sewage problem are in reality coincident, and the more the two ends are borne in mind the more quickly the desired goal will be reached.

Costly Apparatus.—It is still possible to see devices installed at sewage works, which a little careful scientific investigation and thought would have shown could never achieve results proportionate to the outlay. Apart from actual analysis and measurement it is easy, for example, to draw the conclusions that a special form of mechanical filter is removing large quantities of suspended matter when really either very little has been retained in proportion to the volume of liquid passing, or the volume of liquid passing is much less than is assumed.

The cost of certain mechanical distributors, including repairs and loss of lime in proportion to the quantities actually filtered over lengthened periods, was ably dealt with some years ago by Mr. Watson.

The question of the desirability or otherwise of providing costly sewerage and sewage disposal works in country districts, where it is of the first importance to spend money to the best advantage, especially in the provision of cheap houses, may well receive the careful joint consideration of the medical officer and the sanitary engineer.

In many towns in India it is at present financially impracticable to undertake fully developed Western sewerage schemes. Provisional methods have in consequence to be devised, with due reference to possible complete schemes in the future. Development on such lines may be wisest for many country villages or undeveloped towns.

The harmless return of excreta to the soil is subject, of course, to scientific principles, just as the more elaborate methods of the modern sewage works, and it is well that the interest of these latter should not entirely divert attention from the study of more primitive, but still frequently necessary, methods. There is need for careful investigation of the rate of change of suspended and colloidal matter in sewage under different conditions. Closely connected with this question is the large field of research into the conditions of life of the various organisms in sewage works from bacteria to leeches, and their relation to the sewage purification process and to each other.

Thus, it will be seen that while in a limited sense it may be stated that the sewage problem is solved, in that the general principles, according to which offensive organic matter can be mineralized, are now fairly well known, their detailed application will afford work for the engineer and biological chemist for many years to come.

It is gratifying to note that, in America particularly, the value of scientific research on this large problem has always been fully recognized, and that it is now the custom for any scheme of magnitude to be prefaced by preliminary scientific studies. The intelligent co-operation of the engineer and the biological chemist in this work is certain to justify itself by advancing each case nearer to the goal of perfection.

THE DENTAL ASPECT OF MEDICAL INPECTION OF SCHOOLS

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If the records of medical inspection in any school be examined it will be found that the great bulk of the physical defects are in the mouth and throat. Of these the vast majority consist of diseased teeth and mouths, while of the remainder, many may be, and some undoubtedly are, caused by mouth conditions. Records of mouth conditions made by a dental surgeon naturally show a higher percentage of defects, the results of examinations in most localities, showing an average of about 95 per cent. of children with defective teeth.

The conditions vary from that of the child with one or two small cavities to that of those whose mouths are a mass of decay, disease and filth almost beyond description. It is a common occurrence to find mouths so utterly filthy and diseased as to be a menace to the other children and a source of pollution of the air of the schoolroom.

They are conditions that have to be seen to be appreciated; mouths repulsive with filth and decay; hypertrophied and inflamed gum tissue; jagged and suppurating roots; cavities filled with fermenting refuse from previous meals; broken and decayed teeth containing the dead and putrifying remains of the tissues which formed the pulp of the tooth; frequently as many as four or five discharging abscesses, veritable pus factories, pouring continuous streams of pus into the mouth and stomach of the child; teeth covered with green stain and fermenting food particles, and in many cases as a direct result of this mass of infection, a throat blocked by adenoids and enlarged tonsils, and a tongue and fetor of breath giving striking evidence of the resultant indigestion and constipation in the intestinal tract. This is by no means an exaggerated description. Hundreds of cases of which the foregoing is a faithful picture may be found in the schools of any community.

The menace in the decay and loss of the teeth on the health of school children is manifold. It renders thorough mastication impossible and establishes the habit of bolting the food, while the filth which is inseparable from decaying, putrescent and abscessed teeth, is mixed with the food and carried to the stomach.

No one who gives any thought to the matter will question what must be the ultimate effect upon the health of the child. Gastro-intestinal disorders, anemia, toxemia, and malnutrition are some of the more obvious results, lowering the vital potential of the child and making it a ready victim of other and more serious diseases.

To fully understand the menace to the child of the decay of its teeth, one must understand a few of the conditions which obtain in the mouth during childhood. Each tooth in the mouth contains a small chamber the same shape as the crown and roots, which contains the pulp of the tooth, consisting of a small bundle of arteries, veins and nerves which enter by an exceedingly small opening in the apex of the root.

The manner in which the teeth of the deciduous set are replaced is as follows. Situated in the jaw above each deciduous tooth is a developing tooth of the permanent set. As it develops and grows, the root of the deciduous tooth, beginning near the apex is gradually destroyed ahead of the oncoming new tooth until, when the deciduous tooth is shed, its roots have largely disappeared and the new permanent tooth is just peeping through the gum.

When a deciduous tooth is decayed as deeply as the pulp chamber, while the root is partially destroyed ahead of the oncoming new tooth, the pulp dies and becomes putrescent, as any other dead animal matter. In addition there is now a direct opening through the cavity, the pulp chamber, and open end of the root into the underlying tissues of the jaw.

The mouth is a hot-bed of micro-organic life. Over twenty different varieties of disease germs have been found therein, including those of tuberculosis, diphtheria, pneumonia, etc. While the healthy mucous membrane has great powers of resistance a child with decayed teeth has a number of

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openings through the teeth into the tissues of the jaws, open avenues of infection.

The large number of enlarged glands in children is due largely to infection through these diseased teeth. Many of these glands are tuberculous. This mode of entrance of the tubercle bacillus has been proven conclusively by numerous investigators.

In addition to this menace, should an abscess or "gumboil" form, as does in so many cases, it causes the natural destruction of the roots of the deciduous tooth to stop, and the oncoming permanent tooth is forced out of line, in many cases turning the deciduous tooth over on its side, so that is now exposed roots lacerate the cheek or tongue and also create a pocket for the retention of fermenting food, pus and debris. Deciduous teeth will remain in this position in cases of this kind for a surprising length of time. Some of the most nauseating mouths that have come to my notice have been those where, owing to the formation of abscesses on the deciduous teeth, the absorption of the roots has stopped, and each jaw presented a jumble of newly erupted teeth, and jagged, suppurating remains of the deciduous teeth, a mass of corruption, decay and disease, constituting a grave menace to the health of the child and its companions.

A child at about two years of age has the full complement of deciduous teeth, twenty in all. At six years of age the first teeth of the permanent set arrive, one each side, above and below, just back of the deciduous teeth. These teeth, sometimes called the "six-year molars," arrive before any of the deciduous teeth should be shed, as an aid in mastication while the deciduous teeth are being gradually replaced. In addition to this important function, the upper six-year molars, when the jaws are closed, occlude, or lock, with the lower six-year molars in such a definite way that the jaws are held in their proper relation, one to the other, during the shedding period, when the child is from time to time partially deprived of teeth. These two functions make the six-year molars the most important teeth in the mouth, and yet, because they erupt at an early age and without pain, ninety-nine parents out of a hundred fail to recognize them, and they suffer the same neglect as the deciduous teeth. It is pitiful to see the vast number of these teeth that are lost, depriving the child of its power of mastication and causing what in most cases proves to be an irreparable injury to the child's features.

At no time in the life of the individual is nutrition of such paramount importance as during childhood. That thousands of children go from five to ten years with their powers of mastication seriously impaired, in some cases almost entirely destroyed, and the mouth all this time a mass of infection and disease constitutes one of the most serious problems confronting medical inspection.

The effect of these conditions on the spread of disease has yet to receive the attention it deserves. With reference to the group of infectious diseases known as "Children's Diseases," it is a remarkable fact that in practically every case the seat of infection is in or near the mouth, throat or nose. In measles, for instance, the first symptoms is "Koplik's Sign," small red spots with bluish-white point appearing in the mouth, while it is reported that recently it has been discovered that the last place from which infection may be obtained is the mouth. These diseases occur as a rule while the deciduous teeth are in place, or are being replaced by the permanent teeth, a time at which owing to the prevalent neglect, the mouth becomes a hotbed of disease organisms. That this is a mere coincidence it is hard to believe, and I am convinced that there is a definite relationship between the prevalence of these diseases and the neglected and diseased condition of children's mouths. Recently some health authorities, notably Dr. W. A. Evans of Chicago, and Dr. Otis Nesbit, President of the city Board of Health of Valparaiso, Indiana, have gone on record as to their conviction of this relationship, from epidemics with which they were called upon to cope.

The mouth is the great gateway to the body. Through it passes all the nutriment the body contains and a great deal of the air. In addition there is, or should be, there performed a very important part of digestion. Cavities and root canals of decayed teeth form natural incubators for the development of disease organisms. An unclean and diseased mouth is not only a sure and certain source of ill-health and disease to the individual, but many chil-

dren are walking sources of infection to those about them, carrying in their mouths a mass of disease germs which undoubtedly form a most potent factor in the spread of disease. After an attack of one of the acute infectious diseases a child with a diseased mouth may carry the germs of this disease in the mouth after it is deemed free from infection. It would be a move in the right direction if children recovering from the infectious diseases were required to have the mouth in cleanly condition before entering school.

The limit placed upon the length of this paper makes impossible any extended reference to other diseases and their relationship to mouth conditions. Adenoids and enlarged tonsils are undoubtedly due in some cases to infection of these organs from a diseased mouth. Statistics are available showing a definite relationship between these conditions.

In dental practice we not infrequently have to deal with impacted teeth. Sometimes a third molar or "Wisdom Tooth," for instance, is turned on its side, and in its growth in this abnormal position, instead of erupting, presses against the root of the next tooth in the arch, producing severe pains, which are often baffling to both patient and operator till a radiograph shows the offending and misplaced tooth.

The growth of the jaw depends upon the preservation and use of the deciduous teeth. When they are prematurely lost, interfering with the normal growth of the jaw, the larger permanent teeth in crowding into place bring about a condition somewhat similar to that just outlined, producing in some cases effects of a most serious character.

"The physiological activities going on in both jaws in connection with the exchange of the deciduous for the permanent dentures are in themselves sources of nervous stress, and when interferences occur which delay or obstruct the process an amount of peripheral irritation is set up which is the fruitful cause of many and serious reflex disturbances. Chorea, epilepsy, insanity, mental backwardness, all have their often unsuspected origin in impactions and malpositions of the teeth at the period under consideration. The results obtained at the phychological clinic of the University of Pennsylvania, the studies of Dr. H. L. Upson of Cleveland and the work of many other observers, leave no room for doubt as to the dental origin of many cases of the difficulties named and compel a recognition of the importance of appropriate dental treatment for removal of the source of the trouble."

One of the most serious results of the common neglect of children's teeth is the effect upon the features of the child. A knowledge of certain facts in connection with the anatomy of the jaws and teeth is essential to an understanding of this phase of the subject. The teeth are never attached to the jawbone proper, but are imbedded in a "bone of attachment" known as the "Alveolar Process." This bone of attachment is formed solely for the attachment of the teeth to the jaw, is moulded about the roots as the teeth assume their positions in the arch and disappears gradually after the teeth are lost, which accounts for the great absorption that takes place after the teeth have all been lost. Contrary to the common belief then, the bone which is moulded about the roots of the teeth develops in whatever situation the teeth happen to erupt. Consequently the shape of the lower two-thirds of the face depends very largely upon the position of the teeth.

Mouth-breathing produces very definite results upon the features. The drawing down of the cheeks as the mouth hangs open produces excessive inward pressure on the side teeth, narrowing the arch. The natural inward pressure of the closed lips being removed the front teeth project. It is this abnormal position of the teeth which produces the typical adenoid face.

As was mentioned previously, the four six-year molars are the first teeth of the permanent set to arrive, erupting at six years of age before any of the deciduous set should be lost. After they have fully erupted, the twenty deciduous teeth in front of them are gradually replaced by twenty much larger permanent teeth. That twenty large teeth may thus replace twenty small teeth there must be a marked growth of the child's jaws. This growth is gradually taking place from the time the deciduius teeth are all in place till they are replaced, and depends upon the retention and use of the teeth of the deciduous set.

At four or five years, when the deciduous teeth have been retained, spaces will be noticed between the little teeth, evidence that provision is being made for the eruption of their larger successors.

If the deciduous teeth are prematurely lost this normal growth of the jaw is interfered with and the large permanent teeth find a baby jaw with all the crowding and distortion resulting. In addition the six-year molars are not held back in their proper positions in the jaws and drift forward, reducing the space for the other permanent teeth erupting in front of them and adding to the crowded condition. As the cuspid or "eye tooth," as it is commonly called, is the last tooth to erupt, of those of the six-year molars, it is most frequently crowded out. Anyone who has paid any attention to children's teeth will recall how frequently this tooth is crowded out of line.

The six-year molars, as mentioned previously, have the important function of holding the relation of the jaws while the deciduous teeth are being replaced. These six-year molars are not recognized as permanent teeth and are lost in a very large percentage of cases. Their loss produces a shortening of the lower two-thirds of the face, a pouting of the lips and a projection of the upper front teeth that are characteristic.

Thousands of children have their features marred for life owing to some one or more of these causes. The receding chin and apparent weakness of character expressed in many faces are due to wholly preventible causes. If parents recognized these facts the features of many a child might be preserved in their beauty where now they are distorted out of all resemblance to what they might have been.

The question will probably be asked, "What can be done to remedy present conditions?" As a public health problem the situation is without a parallel, owing to the numbers affected by carries and the great length of time necessary to treat many of the mouths that are met with. In addition there is the fact that in this country, while every other disease is provided for by health authorities, both in the matter of preventive measures and in the matter of hospital treatment, no provision is made for the treatment of the diseased mouth of a child, whose parents are unable to pay a professional fee. Toronto is about to establish a dental hospital for children, and is the first municipality in Canada to recognize this need.

The conditions which bring about the lamentable consequences referred to are preventible. The cause of the present neglected and diseased condition of children's mouths is a lack of common knowledge of the facts outlined in this paper. Decay of the teeth can be largely avoided by proper care in the diet and regular cleansing of the teeth and mouth.

It is the aim of medical inspection to meet this problem as other health problems are met; by urging upon the notice of parents and others such facts as have been outlined in this paper; by obtaining as far as possible regular care of the mouth on the part of school children, with compulsory cleanliness as the ultimate and logical goal; and by facilities for the treatment of such children as are unable to pay a fee.

There is no cause quite as worthy as the relieving of the ills of childhood. Medical inspection of schools is the greatest boon that has ever come to the child of our race. As one of the several steps being taken in the interests of health and efficiency in school children, Mouth Hygiene promises results that will be among the most lasting benefits that can be bestowed upon the child.

SCHOOLS AS FACTORS IN PREVENTING INFANT MORTALITY

BY HENRY COIT.

DIRECTOR NEWARK BABIES' HOSPITAL.

There are a great many causes of infant mortality, many more than in any later period of life, more than in all other periods after infancy combined. Some of these are contributing causes; they are obscure and indirect, like parental indifference which is conducive to neglect, like adverse social and industrial influences

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upon the pre-natal and nursing periods and like ignorance, which surrounds not only the newly-born but the older infant with many conditions inimical to its life.

Some of these are immediate causes. They are obvious and direct, like milk, which often conveys infectious disease; like malnutrition from irrational feeding, which is none the less direct though more insidious, and like congenital physical defects, which are such potent factors in the mortality of infants in the first few weeks of life.

There are many who would claim that human mortality in infancy is not an evil, yet those who have experienced or witnessed a mother's grief when contemplating a vacant crib will not agree. We believe that it is an economic misfortune for any nation to lose its children and that no nation can rest on a firmer foundation than the vitality and viability of its offspring.

While the mortality phase of the question cannot be magnified in importance, yet there is another aspect of the question which concerns us far more, namely, the physical condition of those who, while handicapped in infant life, still remain to struggle on up through childhood to feeble, ineffective and dependent adult life. While millions of infants suffer during a short and terrible life and die before they realize what life means, many more millions are so unfortunate as to live on with a physical handicap which makes life a torture, the home a pandemonium and family life anything but desirable.

Beyond this, when we forecast the future of our children and regard them as prospective parents and citizens, to whom we must leave the responsibility of parenthood and citizenship, and who must take, maintain and develop the institutions which our fathers established, and which we transmit, the question assumes an important relation to the stability of the nation.

The Educational Board of Manchester, England, in 1902 instituted the instruction of seventh-grade school girls in infant hygiene, so that they could be useful as the mother's helper. They were called Little Mothers. The plan has been successfully introduced in several of our own cities with excellent results and lasting benefits to the infants at home.

Another and a more widespread movement antedated the foregoing plan by ten years. The Consultation for Nursing Mothers ("Consultation de Nourison") is a centre for the education of the mothers. It was also of European origin in 1892. For this institution we are indebted to Budin, De Four, and Variot in France. When properly organized it is always under medical control and direction, and its station work is followed by a visiting nurse, who supplements the medical work by teaching the mother in her home.

This is not an unmixed evil, however, as the following quotation from Nevin, of Manchester, will show: "It is not merely then our desire to reduce infant mortality which causes us to study this problem, but we are moved even more by the consideration that for every infant we can save we shall raise the level of many others who might have pulled through, but not so successfully."

The best means of preventing sickness and death would be to raise the living power of the individual to what is called immunity. If we could apply this principle to infancy and childhood through educational and prophylactic measures, we would bring about the greatest possible physical efficiency in manhood and womanhood. While physicians have led in this crusade against infant mortality, it is strictly a problem in preventive medicine and, therefore, clearly to be solved by educational methods, which should be applied by the people (the State), at the expense of the people and for the people.

We propose, as a comprehensive plan to check sickness and death among infants and young children, that to the Manchester plan for "Little Mothers" shall be added the French plan, and that the "Consultation for Mothers" shall be conducted within the public school and finally become part of its system.

It cannot be repeated too often that the most fundamental cause of infant and child mortality, expressed through many channels, is ignorance and the most potent influence which will destroy and remove it is imparted and applied knowledge. Infant and child hygiene and the care and and management of children should be taught in women's colleges, in finishing schools for girls and to pupils of the eighth

grade (Little Mothers), but a much wider field for this instruction would be the mothers of the industrial class in the congested school districts, many of whom did not and most of whom could not complete the curriculum of the school.

This instruction has, therefore, been given by private philanthropy in hospitals and infant welfare stations at a few isolated points and has been made available for comparatively few of the great mass of mothers who need it most.

Since the great majority of these women do not realize their ignorance until they have children to care for and since the mother has the custody of the child before and after the school period and since she was not taught infant welfare in the school, she ought to receive a post-graduate course from the school with her own baby as an object lesson. This kind of instruction applied to the indigent mothers in a school district would be justified for the safety of the school itself since from these homes, where parental ignorance prevails, there is a daily migration of older children to the school who often become the carriers of disease.

The home and its hygiene the mother and her maternal fitness, the children and their health, are all intimately linked with the school and anything affecting the integrity of any of these is a menace to the school.

Hospitals and infants' welfare stations are too few and too scattered; public schools are found in every district, are easy of access and aside from the importance of having the mother's interest early linked with the school where her child will later spend much of its time, the logical rallying point for imparting and receiving public instruction is the public school. Teaching the mother or caretaker to lay firmly the physical foundation of the child as a preparation for efficient intellectual work during school life, which continues through so long a period of childhood, is, we believe, a legitimate function of the public school.

Such knowledge properly imparted through this channel would become a most effective factor in the prevention of infant and child mortality because it would be bestowed upon a far greater number than, as now, through isolated medical charities. The knowledge necessary to the attainment of these great objects is now within our grasp, is systematized and needs only the active agency of the public school with the co-operation of trained physicians and nurses to make it effective.

The plan of placing "The Mothers' Consultation" in the school grew out of necessity. In the summer of 1911 one of the stations of the Babies' Hospital in Newark, N.J., located in a congested district, was no longer available and was temporarily transferred to a vacant school room nearby. The writer then saw an opportunity to illustrate a plan for putting such consultations in all the elementary schools. Application was made to the Board of Education for the use of the Eighteenth Avenue School, which was granted, for the purpose of working out the details of the plan under the direction of the Babies' Hospital staff.

There is no work of a strictly medical character performed at these consultations or in the homes, only the instruction of the mother and the gathering of data to determine the influence of instruction upon the viability of the child. This includes records of the vital phenomena and social statistics. Instruction is given to the mother in hygiene, reasons for cleanliness, dangers of dirt, care of the new-born, importance of breast-feeding, the care of milk, artificial feeding, weaning, children's diet, management, advantage of system, the bath, the clothing, the rooms, the air, ventilation and sunshine, the baby's bed, its sleep, danger of anodynes, exercise and the care of the sick child. If a child be found ill it is referred to the family physician, or if too poor to a medical clinic or hospital.

The link which will fix the mother's interest is the periodical weighing of the baby, which is the best index of its progress. The interest of the visiting nurse in the infant's welfare and her attempt to help the mother apply the instructions given by the physician, will engage the mother's best efforts to apply them, and one year's teaching of this character becomes a liberal education in the hygiene of the home.

The consultations, one for foreign-speaking mothers and one for English-speaking mothers, are in charge of the medical staff of the Babies' Hospital with the active co-operation of the principal and his teachers, upon which depends largely the success of

the experiment. A detailed report of this work and its results for the first year will shortly be made to the Board of Education of the city of Newark with the hope that it may be found valuable enough to be established elsewhere.

SAVING CANADIANS FROM THE DEGENERACY DUE TO INDUSTRIALISM IN CITIES OF OLDER CIVILIZATION

BY P. H. BRYCE, M.A., M.D.,
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The prophet has ever been viewed with suspicion, and when, like Cassandora or Jeremiah, his message has been fateful and critical of the doings of the people of his time, such has been received too often with derision and the disturber laughed to scorn.

At a time when Canada from sea to sea is teeming with life and energy, population through immigration increasing by nearly half a million annually, capital to a hitherto unknown degree being brought in for investment, I feel that it is an unenviable task to have to direct the attention of this Association and through it the public to certain facts which have a very important bearing, not alone on the physical, mental, and moral welfare of our people and nation, but whose results must further become, if the situation remains or increases, as unfortunate for us as have been the effects of similar conditions upon the people of England and are becoming for those of Germany and the United States.

I desire to first direct your attention to the figures taken from the census of the United States for 1910, and that for Canada of June, 1911.

TABLE I (a).

Population of the United States.

	1910.	1900.	1890.	1880.
Total	91,972,206	75,994,575	62,947,714	50,155,783
Rural	49,348,883	45,187,390	40,227,491	35,383,345
Urban	42,623,383	30,797,185	22,720,223	14,772,438
Percentage Distribution.				
Rural	53.7	59.5	63.9	70.5
Urban	46.3	40.5	36.1	29.5

Total increase of United States 1900-1910, 21 per cent.

Total rural population, 1900	45,197,390
Total rural population, 1910	49,348,813
Actual increase in census period	4,151,423
Estimated natural increase at 1.2 per per cent. per annum	5,423,686
Total urban population, 1900	30,797,185
Total urban population, 1910	42,623,383
Actual increase in census period	11,826,198
Estimated natural increase at 1.5 per cent. per annum	4,619,528
Total U.S. immigration in ten years, 1901-1911	8,789,386
Estimated immigrant farmers and farm laborers, based on data of 1911	2,636,815
Estimated rural loss without allowing for any natural increase in rural immigrants	4,656,815
1901	487,918
1902	648,743
1903	857,846
1904	1,020,499
1905	1,020,499
1906	1,110,499
1907	1,285,249
1908	782,870
1909	751,786
1910	1,041,570

TABLE I(b).

Population of Canada.

	1911.	1901.	1891.
Total	7,204,838	5,371,315	4,833,239
Urban	3,280,444	2,021,799	1,537,089
Rural	3,924,394	3,349,516	3,296,141
Percentage Distribution.			
Rural	54.4	62.3	67.9
Urban	45.6	37.7	32.1

Total increase for all Canada, 1901-1911, 34 per cent.

Presented before the Canadian Public Health Association Congress, Toronto, 1912, and revised for *The Public Health Journal.*

Total rural population, 1901	3,349,516
Total rural population, 1911	3,924,394
Actual rural increase in census period.	575,878
Actual percentage of rural increase.	17.6
Estimated natural increase at 1.2% per annum	401,941
Total urban population, 1901	2,021,799
Total urban population, 1911	3,280,444
Actual increase in census period	1,258,645
Actual percentage increase	62.5
Estimated natural increase at 1.5 per cent per annum	303,269
Total immigration to Canada, 1901-1911	1,715,326
Estimated farmers and farm laborers, based on 1911 (at 30 per cent.)	514,597
Estimated rural loss without allowing for natural increase of rural immigrants	340,660

Canadian Immigration by Years.

1901-2	67,379
1902-3	128,364
1903-4	130,331
1904-5	146,266
1905-6	189,064
1906-7	124,667
1907-8	262,469
1908-9	146,908
1909-10	208,794
1910-11	311,084
Total	1,715,326

The first obvious fact gathered from the tables is that the population of the United States increased in the decade just 21 per cent., while that of Canada increased by 34 per cent.

It will be further observed that the urban populations have notably advanced relatively to the totals in both countries, that in the United States from 40.5 to 46.3 per cent. of the total, and that of Canada from 37.7 to 45.6 per cent. of the total in the first instance by almost 6 per cent., and in the latter by 8 per cent.

A still closer examination of the tables shows that the urban population of the United States increased during the period by the enormous amount of 38 per cent., while the rural population increased by only 9.2 per cent. Similarly and in even greater relative proportion in Canada the urban population increased by 62.5 per cent., while the rural increase was only 17.6 per cent.

If we compare the populations which in the two countries might logically be expected in urban and rural districts, we may first estimate the natural increase of that in 1900, which in the urban we may place at 15 per cent. and in the rural at 12 per cent. This in the cities of the United States has been exceeded by 23 per cent., while in the rural population it has fallen to less than 9 per cent. increase over what it was in 1900. In Canada we find that the urban increase has exceeded the normal by 47.5 per cent., and the rural has exceeded the normal by only 5.6 per cent.

At first sight the significance of these comparative figures may not be appreciated until we examine that other influence upon population, viz., immigration.

Thus the total immigration increase in the United States was 11.2 per cent. of the population in 1900, while in Canada it amounted to 31.3 of that in 1901.

Yet another point in the figures is that of the proportion of immigrants who gave farming as their occupation. In the United States the ratio obtained from answers secured at ports of entry was 29 per cent., while in Canada it is estimated at 30 per cent. of the total immigration. Thus in the United States the deficiency in the assumed normal rural increase is over 48 per cent., while that in Canada was 37.5 per cent.

We have thus before us the main facts relating to the urban and rural populations of the two countries, which will help us to study and understand some outstanding phenomena presented by the commercial, industrial, and social life amongst these two peoples in many ways common in their origin and in their civilization.

Most economists are agreed that there is in any well-balanced population a certain proportion of what we may call producers of the raw materials of wealth, which primarily include those foods necessary to the subsistence in health and comfort of any people. As a corollary to this it follows that such foods should be generally distributed and obtainable, at prices possible for every member of such population.

Clearly this depends upon the climate of the country, the industry of the people,

and the effectiveness of their labor-saving devices and production at a low cost. It will further be apparent, when we take Great Britain as an example, that such may be obtained by the alternative process of being able to produce merchandise and own ships through which by exchange such necessaries can be equally readily obtained in her colonies or in other countries. Indeed, we find in this instance that although Great Britain produces not more than one-third of the wheat and about the same of the meat necessary to feed her own people, yet she is able to supply both to her people more cheaply than these same articles are supplied to the people of either Canada or the United States, both of which have hitherto supplied her with much of her food.

To illustrate this I quote the following from the London Chronicle of July 17th, 1912.

The most recent statistics show food prices to have risen:

In the United States by 29 per cent.

In Canada by 27 per cent.

In Germany by 40 per cent. since 1902.

In France by 20 per cent. since 1890.

In England by 5 per cent., as food and household commodities together; but as foodstuffs alone by only 2 per cent., and this includes 61 per cent. increase in the price of bacon. Wheat, mutton, sugar, tea, coffee, potatoes, cocoa, are cheaper in England than in 1890.

The last report of the Minister of Labor for Canada shows 256 articles to have increased by 99 per cent., while every paper in the United States points to the present high cost of living, while that country has already become an importer of meats. It is therefore abundantly apparent that unless situated as England is, a country must become the producer of her own needs, if this one supreme problem of prosperity and public health is to be settled satisfactorily; or, in other words, there must be a good majority of prosperous agriculturists in any population, as in Denmark,* if a country is to be contented and really prosperous.

Before turning to the agricultural problem it is well that we examine the social meaning of this enormous growth of both American and Canadian cities. In all Canada there were in 1901, 62 cities and towns with a population of over 5,000, and only two with a population of over 100,000. There were in all 200 urban municipalities which include the smaller cities and towns of over 2,500 population.

Now had the urban increase of 1,258,645 in Canada largely of immigrants been distributed over these smaller municipalities, from the merely health standpoint it is safe to say such would have been improved over their previous environment. But it is found that of this total increase, 202,750 (75 per cent.) are found in Montreal; 168,495 (80 per cent.), Toronto; 93,695 (22 per cent.), Winnipeg; 27,964 (1,243 per cent.), Regina; 11,891 (10,523 per cent.), Saskatoon; 39,306 (893 per cent), Calgary; 22,274 (848 per cent), Edmonton; 73,391 (271 per cent.), Vancouver.

In a word, 639,769 persons have had to be absorbed by a population of 554,506 in eight cities in ten years, or 64,000 annually, and as an individual instance, Winnipeg has had to absorb in a single year one-third of her total population in 1901.

Now it is apparent that in a new western city where no old slums exist, it is inevitable that new buildings be erected; but abundant evidence everywhere can be had that such may be associated with most of the well known evils of overcrowding. The annual reports of the medical officers of Toronto and Winnipeg deal with some of these conditions.

It is not possible within the limits of this paper to enter into the details of the distribution of immigrants by nationalities in the several crowded areas of our cities; but as the history of the growth of cities on this continent everywhere shows peoples of the same nationality, many having the same language, occupations, and social status, tend to congregate in certain areas where old houses become tenements and too often are limited as to inmates only by their floor capacity, the repacity of the landlord and the regulations of the health department.

It is not necessary to indicate that the same results from overcrowding are inevitable in such conditions since New York and Chicago have already demonstrated it, as was shown in New York statistics quoted last year in my paper on "Tuberculosis in Immigrants." Every health officer is aware of the localities which give him most

*Denmark had in 1906 a rural population of 1,565,586 and 1,023,334 of urban.

trouble concerning the acute infections; but the deeper meaning of this urban overcrowding is not arrived at even in the years of a single census.

Dr. F. W. Mott, Pathologist to the London County Asylums, in a paper read April 24th, 1912, before the Royal Sanitary Institute, points out several very important facts, the first being that "the standard of sanity is being yearly raised, a great number of harmless idiots and weak-minded persons who formerly were allowed to roam at large are now gathered into asylums." This does not apply alone to senile dementia which constitutes 23 per cent. of the total 20,000 inmates of London asylums, but under an Act now before the House of Commons this will include a notable number of the feeble-minded, as yet non-registered, or persons which, according to a Royal Commission on the feeble-minded in England and Wales, constitute 4.6 per 1,000 of the total population.

Dr. Mott further states: "The pauper population undoubtedly contributes a much larger ratio of lunatics to the public asylums than the non-pauper population." He then gives a table of all London parishes and the ratio per 1,000 population of all pauper lunatics chargeable to the Poor Law. They run from 2.6-2.8 in Hampstead and Lewisham to 9.2 and 9.5 in St. Giles and Whitechapel.

Any who know London will appreciate the figures as they relate to the pauperism, squalor, and overcrowding of the latter two parishes. Dr. Mott later goes on to remark: "The Royal Sanitary Institute preaches and teaches that the first duty of the State is the prevention of disease; failing that, the cure, and failing that the prolonging of life and the relief of suffering."

"If it can be shown that there is a correlation between insanity, tuberculosis, alcoholism, syphilis, and overcrowding in one-roomed tenements and insanitary dwellings of our large cities, it might be asked whether public money would not be better expended in attempting to solve the housing question than in expending vast sums on sanatoriums and lunatic asylums in the hope of dealing with physical and mental degeneracy."

It will now be proper for us to turn to that part of the problem which especially interests us, viz., the possibility of finding a remedy for a situation which from the economic, social, and public health standpoints seems to portend evils so disastrous as to demand the serious thought and action of everyone interested in the welfare of our common country.

None, I think, can imagine that any attempt to turn back the veritable flood of immigrants from Canada is either necessary or desirable; but rather that all should be determined that we shall encourage to come only those who will be a social asset of real value as well as a source of material wealth. The areas of territory, untouched by the plough, are in practice immeasurable.

Remember that the total area of Canada is 2,316,684,071 acres, while Alberta in 1911 had but 1.47 persons to the square mile, and the statistics show a disappointingly small number of either our own or incoming people settling upon them. As a natural result of increasing the number of consumers rather than the producers of foods of the people we find in every item an almost continuous rise in wholesale prices since 1900. Thus in a report of the Bureau of Labor for 1911, on wholesale prices, a table is given which shows the following:

TABLE II.

Showing Increase of Prices for 1900-1911.

	Average for 1890-1900.	Prices for 1911.
Grains and fodder	100	145.
Animals and meats	100	146.7
Dairy produce	100	136.2
Fish	100	143.6
Average		143.75

That these prices are but the corollary of decreasing supplies may be learned from the following table taken from the Ontario Bureau of Industries Report:

TABLE III (a).

Giving totals of Different Animals in Ontario in 1905 *and* 1909.

Cattle.	1905.	1909.
Milk cows	1,106,000	1,075,000
Other cattle	1,782,000	1,593,000
Total on hand	2,888,000	2,668,000
Total slaughtered	714,000	800,228
Sheep and lambs	1,324,000	1,320,000
Sheep sold or slaughtered	2,584,000	2,767,000
Swine	1,906,000	1,551,000
Sold or slaughtered	2,267,000	1,986,000
Poultry	9,738,000	12,086,000
Sold or slaughtered	3,340,000	4,177,000

The following figures taken from the same report are of much importance in this study, taken in connection with the practically 50 per cent. increase in wholesale prices already given:

TABLE III (b).

Giving Average Farm Products in 1905 *and* 1909.

	1905.	1909.
	Cts.	Cts.
Wheat, average price	80.0	102.3
Spring wheat	82.3	100.6
Barley	50.3	54.8
Oats	38.3	39.5
Peas	76.4	84.6
Beans	146.	161.
Corn	37.3	42.9

The same Ontario Report supplies the following melancholy data:

TABLE IV.

Showing in 1909 *Increase or Decrease in Acreage from Average for Five Years:*

	Acres.
Fall wheat	75,000
Spring wheat	21,000
Barley	60,000
Oats	62,000
Peas (increase)	987
Beans (decrease)	3,100
Corn (increase)	13,000
Corn for silo (increase)	70,000
Potatoes (increase)	13,000
Turnips (increase)	12,000

Comparing the human percentage increase in population with that of the products of the farm, the following taken from the North-West census of 1906 is of interest:

TABLE V.

Compaaing increase in 1901 over 1891 with that of 1906.

Population.	Increase. Total 1901.	Urban 1906.
Manitoba	43%	96%
Saskatchewan	182	239
Alberta	153	205

Farm Products.	Increase.
Manitoba—	
Cattle	49%
Pigs	59
Saskatchewan—	
Cattle	182
Pigs	346
Alberta—	
Cattle	158
Pigs	148

Grain.	Increase.
Manitoba—	
Wheat	43%
Barley	141
Oats	62
Saskatchewan—	
Wheat	450
Barley	700
Oats	700
Alberta—	
Wheat	500
Barley	900
Oats	400

Reverting to the Province of Ontario, whose statistics are most readily comparable, we find that with an assumed natural increase at 12 per cent. in ten years of the rural population of 1,240,969 in 1901, or 148,916, and 30 per cent. of the 404,000 immigrants who gave Ontario as their destination, or 121,200, there should have been an increase of 270,116, or 27 per cent.; whereas, as a matter of fact, there was an absolute loss of population in rural Ontario of 52,184.

For such a condition of affairs than which from a national standpoint, or from the standpoint of the most important Province of the Dominion, nothing in my judgment can be more unfortunate, except the logical consequences which must follow, if some adequate remedy be not applied, we ask ourselves: "What are its real reasons?"

To say that it is due in part to a world-wide tendency existing ever since the introduction of modern methods of transportation is obviously true; to acknowledge that the frequency of intercourse between country and city assists the allurements of urban life is almost unnecessary; but to be satisfied with such answers as adequate is obviously to overlook a certain class of facts, which can only be demonstrated by the most careful study of statistics. For instance, it is found that the increase or decrease in the average number of bushels per acre in 1909 of fall wheat, spring wheat, barley, oats, peas, and beans in Ontario, was +0.6,—1.0,—2.8,—1.0,+0.6 and 1.0, respectively, per acre, while the increases in prices over all items taken together was but 10.5 per cent.

It has already been noted that the increase in wholesale price of all the four classes of foods for all Canada was 43.75

per cent., so that the difference between the two if comparable is 33.25 per cent. It is further proven by the decreases in rural population that the number of farm employees must necessarily be less and in keeping with this their wages must be greater. If, then, in the item of small relative increase in the price of the farm products to the farmer and an increased cost of production, we find yet more potent reasons for the desertion of the farm by the rural population of Ontario and of all the other older Provinces, absolutely or relatively, it is plain that Governments, leaders in commerce, every intelligent citizen must lend their energies to the solution of this of all problems, the greatest, since it lies at the very root and basis of our common prosperity, the happiness of our people, and the physical and moral health of the nation.

The several elements entering into the solution of the problem may be now readily comprehended and easily understood. As illustrated by statistics they are:

1st. Lessening the cost of agricultural production.

2nd. Preparing and conserving all products of the farm in the most perfect manner possible until they reach the consumer and for which the highest practical prices are paid to the producer.

3rd. The transportation of farm products as cheaply and as directly to the consumer as possible.

I. Dealing with the first element of the problem it is evident that it depends essentially upon the agriculturist himself and necessarily involves:

(a) Sufficient capital to purchase labor-saving machinery as in every up-to-date factory.

(b) Skilled men to handle and care for machinery and sufficient capital to employ such.

(c) Organized methods for setting laborers to work, which means business ability.

(d) Preparation of soil for an assured abundant crop, which means in most cases in Canada proper sub-soil tile drainage which demands both capital and labor (and well-applied tillage).

(e) Care in securing seeds of high producing varieties and of assured vitality, which again involves intelligence and some capital.

(f) Equal care in harvesting each crop in turn and in storing it so as to maintain its highest market value. It will be apparent that nothing less than scientific knowledge and business training, applied to agriculture as to any other manufacturing or commercial concern, can serve to fill these essentials to success and which, indeed, involves education and knowledge of the widest range and most thorough character.

But the last item leads clearly to our second element in the problem, viz.:

II. Preparing and conserving all products as perfectly as possible, which means:

(a) Selection of crops, which long experience has shown different localities to be fitted for.

(b) A local supply of labor not only for efficient cultivation, but also to harvest each crop properly when mature. These points touch upon the problem constantly being illustrated by the statistics given. There must be a larger rural working population, which means for them some method whereby their labor will be constantly engaged profitably, which means more varied and intensive farming such as that supplied by gardening, greenhouse working, and the feeding of cattle and poultry in winter. All this means doubling the crops by increasing soil fertility and local wealth by the employment locally of more energy and labor.

(c) This means in regard to general prosperity the employment of methods for preserving meats, eggs, butter, and fruits after the manner best known to science that is by careful picking, preparing, packing, and preserving by cold or in other words adopting modern refrigeration methods, which more than any other means will enable the farmer to control the market price of his products instead of this being determined by the middleman, not a producer, in some city hundreds of miles distant from the place of production.

III. The transportation of farm products from the producer to the consumer at the lowest cost possible, in keeping with the reasonable profits of the transporting method, whether wagon, railway, motor van or steamship.

It is apparent that in several of the elements indicated as essential to agricultural success, there would seem to exist an implied or necessary opposition between the interests of the producer and the middleman, be he peddler, railway company, or merchant; but to the extent that each of these is necessary to the economic and proper division of trade and handling of products this is not so. Of course, beyond this need there is necessarily a conflict. To make but one illustration one asks: "Is it necessary that a province be sub-divided into districts by the buyers for the great meat packing houses, who receive day by day from headquarters in some large city, instructions as to what the price of cattle, hogs, and other farm produce is to be, and is it necessary that they shall freeze out through the capital of these companies any individual drover or butcher who may dare enter any pre-empted field? Is it necessary to general prosperity that such companies get control by lease of city cattle markets and of the stock of competing abattoir companies and command not only the purchases in the field, but also the purchases in the stock yards, obtaining at the same time special privileges regarding cars at all the railway cattle yards of a district? And is it in the interests of general trade or of the producers or consumers who together number millions that three or more prices be added to most articles between the producer and the consumer? Surely it is time that capital and labor were combined in the interests of the agriculturist and the protection of the consumer. It may well be that a whole horde of commission men and small dealers, as middlemen might in the changed methods of co-operation in producing and trading as in England and elsewhere, prove unnecessary and a drug in the business field; but there is a certainty that the producer and consumer would each come into his own and more if the present non-producers would be forced to engage once more in that agriculture which has been abandoned, while capital and business experience would be taken with them to their own and to the community's advantage as a whole.

In a word, we here are forced as citizens, as students of every social problem affecting the happiness and prosperity of the people as a whole, and as apostles of preventive medicine carried into every phase of life, to seriously ask ourselves and others: How long can a country, essentially a producer of raw material by virtue of geographical location and extent of territory still largely undeveloped, continue to develop normally and prosper, when it has shown a displacement of rural population during the last ten years to an extent so far as I can learn never witnessed before in the history of any people, and an increase of urban population rapid even beyond the palmiest days of United States immigration? Can we as intelligent Canadians view without alarm a situation where a population largely without capital, mostly of casual laborers, often of foreign tongue, and in ten years greater than the population of eight of our largest cities, has crowded into our urban centres living necessarily from day to day upon the ever-changing demands for day labor, forgetting that 1890 and 1907 may come again?

Are we, if we realize these facts and their meaning, to remain inactive, taking no organized steps to lessen this abnormal and insane urban influx by turning this mass of human energy back to the land, and if not to prevent at least to minimize inevitable disaster, where speculation and not production has seized hold of so many who cannot think along economic lines and who illustrate only the *carpe diem* of superficial Epicurean philosophy?

From nowhere better than the Canadian Public Health Association can such a warning be sounded, such methods be advanced, and such action be taken, since in a peculiar sense we have assumed a health and social guardianship of the people; while if we speak wisely we may properly expect that our teachings and advice will be heard.

THE CARRIER QUESTION

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I am assuming that the abolition of infectious diseases constitutes the prime duty of, almost the only official duty possible to, the present generation of Public Health

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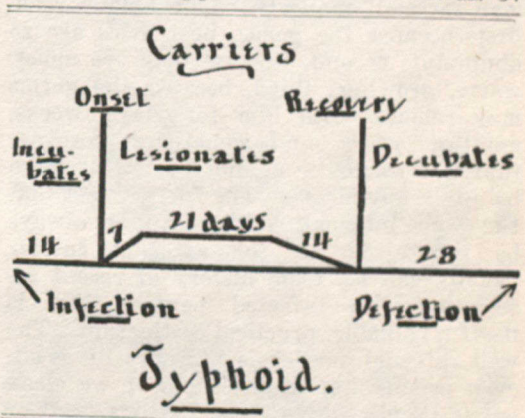
men; that the sources of these diseases should be attacked rather than the routes of transmission; that infected persons (or animals) are the only known, or even probable, sources which exist on a scale sufficiently large to be worthy of notice; that, therefore, the study of infectious persons, their origin, history, and recognition, is the obvious first step in the campaign.

Where are these infected persons, these sources of all our troubles? How do they arise? How shall they be recognized and especially how shall the infected well person be discovered?

Persons sick with an infectious disease have long been recognized as capable of transferring that disease to others. That persons well, acting as intermediaries, may at times carry the germs of disease from the sick to others, has also long been known; but it was supposed the germs were carried, not in, but on the bodies of these intermediary persons, especially on the clothing or the hair. An exaggerated belief in the possibilities of this external carriage led to extremes especially examplified in the old-fashioned port quarantine, fumigation of passengers and baggage, etc., and earnest men within a decade have even advocated for visitors to infectious cases, the wearing of rubber shoes, the washing of the beard with alcohol, and other like pagan rites.

Now, we recognize internal carriers, that is, in the accepted usage, well persons, carrying the germs, not on, but in their bodies, not in the form of a few dried organisms attached to clothing, or skin, or hair, but in the form of many active swarming organisms, multiplying in the body or escaping from the body in great number through the discharges of the body, not for a few hours or a day, but for several days or even long periods.

The pendulum at first swung so far after this discovery that some of our greatest leaders preached pessimistically that the existence of these infected well persons dissipated forever the fond hope of the abolition, or even the effective restriction of the infectious diseases, partly on the ground that such carriers are very numerous, partly on the ground that they are not identifiable. But I believe that the carrier question is not only solvable, but does not really add very much to our existing troubles, because practical experience shows that they are *not* very numerous and *are* identifiable. I do not base this on the literature of the subject wholly. It is chiefly the result of rather strenuous experience gained in handling an average of two epidemics a week for some years past, epidemics which involved all the ordinary varieties of infectious diseases, were seen in a wide variety of places, and occurred amongst a fair variety of people, in railroad camps, lumber camps, mining camps, schools and institutions: in rural districts, small hamlets, villages, and cities. It is not often that epidemiologists have the opportunity to handle thus several hundred outbreaks in a very few years, and we made what we could of our opportunities. To Dr. A. J.



Chesley, then my invaluable colleague, and now successor as Director of the Division of Epidemiology in the Minnesota State Board of Health, must be ascribed the bulk of the evidence relating to the practical applications in scarlet fever and measles.

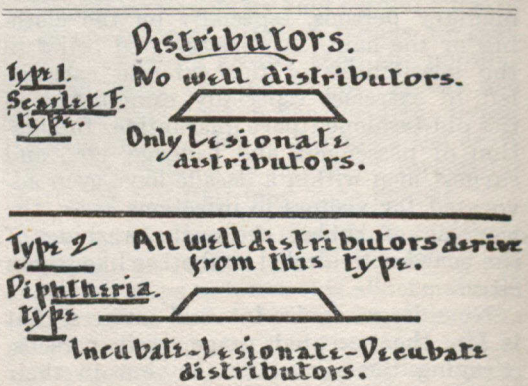
To begin with some definitions and nomenclature: A carrier in the broadest sense is any person who acts as a conveyor for germs, although inaccurate usage has limited it, rather indefinitely, to well persons, internally infected. The externally infected carrier, he who has germs on his hands, his clothes, his hair, etc., is individually, rather unimportant, and he should be distinguished from the internal carrier who is really a living incubator. The external carrier can be detected by his close, recent association with an infected person; he can be put out of action promptly by a few minutes vigorous treatment with soap and water, and even without this, he is not likely to carry infection more than a

day. The physician, the nurse, the untrained attendant, the visitor, largely furnish these external carriers. Washing the hands carefully after every contact with infection will abolish .99 per cent. of the dangers they provide. The external carrier individual, is, therefore, little more of a problem than is a non-living conveyor, like a spoon or a towel, except that he can move by his own volition. As later explained, it is the relative abundance of external carriers which make them of moment not their individual prowess as germ distributors.

The internal carrier, the living incubator, he in whom the germs have established a definite habitat and breeding ground, is, man for man, many times more dangerous, first, because the germs he carries are so abundant; second, because they are moist, warm, growing; third, because the germs may remain with him for days, weeks, months, years, and sometimes forever; fourth, because he cannot be rid of them by any ready means. The further fact that the well internal carrier cannot always be recognized, as the external carrier usually can be, from history of recent association with infected persons, etc., is itself a valuable, practical distinction. The well internal carrier is at times of great, even crucial importance; and if we class, as we should, *all* infected persons, well or ill, as carriers, the internal carrier problem is coincident with the main problem of infection. Three classes of such internal carriers may be recognized, and I have ventured to suggest names for them, correlating with certain stages in the natural history of infectious diseases.

All infectious diseases present seven more or less well defined stages, infection, incubation, onset, fastigium, convalescence, decubation, and defection. In the incubation period the patient-to-be is well, although the germs are present in the body busy establishing themselves. In the period following recovery, the ex-patient is well, although the germs are often still present in the body, busy disappearing. This I call decubation. Every complete case of an ideal infectious disease presents, constructively, at least, three periods during which the patient is infected. In the first period (incubation), and in the last period (decubation), he is well; in the middle, including onset, fastigium and convalescence, he is ill.

The decubation period or period of gradual disappearance of the germs, balances the incubation period or period of gradual development of the germs. The defection or final disappearance of them from the body balances the infection or first appearance of them in the body. Of the three periods the incubation period is without lesions of any kind; the decubation period is without active lesions (although it presents sometimes aftermath lesions, such as pitting, scaling, paralysis, etc.), but the interval between presents actual lesions of function or structure, due to the activities of the germ in the body at the time. This is the lesional period. Infected persons in the incubation period I call incubates; infected persons in the decubation period, decubates; infected persons in the lesional period, lesionates. The

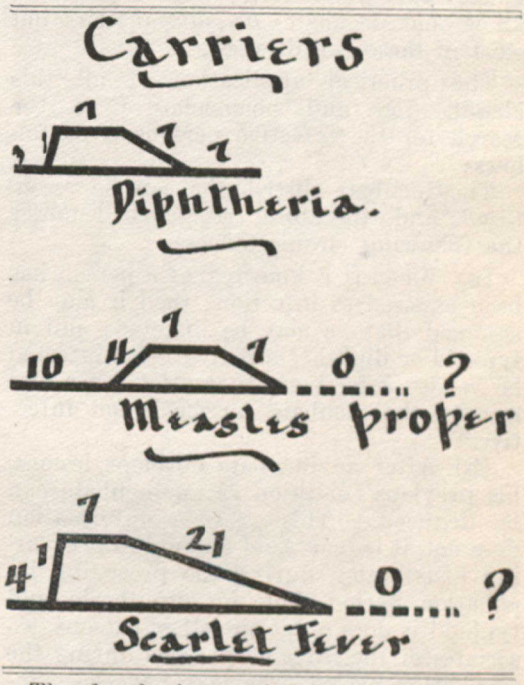


significance of these distinctions from the epidemiological standpoint is as follows:

Incubates, i.e., infected persons who have not been ill as a result of the infection, may be first divided into those who go on to recognizable lesional development and those who do not. Thus the incubation period may be normal, i.e., end by the development of lesions; may be aborted by the early disappearance of the germs, or may be indefinitely prolonged, without lesions developing at all. The famous Typhoid Mary, who yielded, week after week for at least two years of observation, discharges swarming with typhoid bacilli, was a notable example of a prolonged incubate carrier. She had been infected, the germs had established themselves, developed, and continued to grow in her, but she never had any recognized lesions.

It must be noted, however, that an incubate, while necessarily infected, is not necessarily infective, i.e., the presence of the germs in the body does not necessarily involve their escape from the body. In diphtheria and in typhoid fever, the incubate, whether he develop lesions later or not, is both infected and infective. In measles and scarlet fever, the incubate is infected, but not infective. The diphtheria or typhoid incubate, is, therefore, to be feared as a possible source of infection; the scarlet fever and measles incubate is not. Hence an incubate, although necessarily a carrier, in the literal sense, is not necessarily a carrier in the conventional, i.e., in the sense of a distributor. To avoid confusion I would suggest that the term *carrier* be defined hereafter as applying to *all infected* persons, the term *distributor* only to those infected persons who are also *infective* persons. Then we can say incubates are always carriers in typhoid, diphtheria, scarlet fever, and measles. They are distributors also in typhoid and diphtheria, but not in the other two.

The lesionate in almost all infectious diseases is the great source of infectious germs. Of course this has long been recognized, indeed, for centuries the lesional period has been the only infective period really distinctly established and accepted. This period begins with onset and terminates with complete recovery, that is, recovery from the infectious disease itself, not necessarily from all the complication or mixed infections which may be implanted on it. Taking a pure infection and an uncomplicated course for our ideal picture, however, the lesional period is usually infective throughout (lung tuberculosis is one of the notable exceptions). A lesionate is, therefore, not only a carrier, but almost always a distributor, actual or potential. The lesionate is also a more extensive and a constant distributor on the average than is either the incubate or the decubate. It is true that the rate of distribution may vary, that the lesionate may turn out more germs per minute at one stage of his disease than at another. The accompanying lesions themselves may act at one stage to aid distribution more than at another. Thus the catarrh and bronchitis of measles, with its sneezing and coughing, tend to increase the mouth spray excessively over normal; and during the coughing and sneezing stage the patient is, for purely mechanical reasons, a wide distributor. The mechanical facilities for distribution become much restricted, as the coughing and sneezing disappear; even though the number of germs per c.c. of the discharges remain as high as ever.* But, however, the lesionate may vary as a distributor, he is usually actively and fairly constantly at it.



The decubation period, the period when the body has become immune to the poisons of the germ and sometimes to the germ itself, is the period during which the germs tend to disappear. Just as the incubation period, normally ending in disease, may be indefinately continued, so the course of decubation, normally ending in the disappearance of the germ (defection), sometimes fails to follow its normal, the germs remaining for long periods or even indefinitely. Thus are developed decubate carriers, not only in most cases of many infections for a brief period, but in some cases of some infections for very long periods. The well carrier who has been sick and has recovered is simply one in which normal decubation is greatly prolonged. Incubates are necessarily carriers, but not necessarily distributors (i.e., in lung tuberculosis). Thus incubates in

*The abundance of the germ itself is only one factor in relative infectivity, a subject which would require a separate paper to discuss properly.

scarlet fever, measles, typhoid, and diphtheria are all carriers; in typhoid and diphtheria incubates are also distributors. Decubates in typhoid fever and diphtheria are both carriers and also distributors; in scarlet fever and measles it is a question whether there be a decubation period proper, i.e., an infected period following disappearance of lesions. If there be, scarlet fever and measles decubate *carriage* must exist; but whether it exist or not, we know that decubate *distribution* does not exist in these two diseases.

The practical application of all this classification and nomenclature to the search for the infective persons is as follows:

The incubate distributor can be recognized, and, therefore, safeguarded under the following circumstances:

(a) When it is known that a person has been exposed to infection; then it may be assumed that he may be infected; and in typhoid or diphtheria that if he be infected he is also infective. In scarlet fever and measles the incubate carrier is not infective.*

(b) After an incubate develops lesions, his previous condition as an incubate can be deduced. This *post-hoc* information does not, it is true, lend any aid to preventing distribution during the preceding incubation period, but in diphtheria and typhoid it does point out other persons, associates of the infected persons during the incubation period, who may have been infected by him, and, therefore, are worth watching.

(c) When infection of others can be traced definitely to him. This is the most common method of recognizing the prolonged incubate, the incubate distributor proper—the man who is internally infective without developing lesions at all.

(d) When systematic laboratory tests of persons suspected of being incubates can be made, and the germs actually found. This has been done as a routine measure chiefly in diphtheria and in cholera. It cannot, of course, be done in scarlet fever, measles, smallpox, or chickenpox, etc.

(e) When, generally by accident, tests made in a routine manner for other purposes happen to discover him.

The lesional distributor can and should be recognized by the symptoms he presents in all typical cases, by every physician who sees him. Unfortunately, however, practising physicians see but a minor fraction of the total lesional distributors, i.e., they see only the severer cases; as a rule, the mild, unrecognized and concealed cases are not called to their attention. Moreover, because practising physicians see little of, and study even less, the infectious cases which are called to their attention, the early and late lesional stages are seldom studied sufficiently by them to make their recognition easy. But the contagious disease specialist, on the trail, with the epidemiological history, and an intimate knowledge of incubation periods and prodromes to assist him, should, can, and does recognize most lesionates in almost any stage of the lesional period, clinically or by culture. To such an expert the recognition of the lesional distributor, however difficult to the practitioner except in the fastigium, is a matter usually of a glance, sometimes of a little careful study, or, at most, of a day or two of observation. The finding of lesional distributors, in early and late stages, of mild, unrecognized and concealed cases, is, of course, one of the chief duties of the epidemiologist.

The decubate distributor is recognizable in the normal decubation period by the history of the recent preceding attack, sometimes by the aftermath lesions, desquamation, pitting, paralysis, etc., or by blood reactions like the Widal or Wassermann or by cultures. When decubation is prolonged until the lesional period has been forgotten, or if as sometimes happens the existence of the lesional period is overlooked or wrongly diagnosed, or purposely concealed, the decubate distributor is in a position parallel with that of the incubate distributor who does not develop an attack at all, and is recognized by the same methods, most satisfactorily by tracing to him new cases of actual disease.

To sum up the situation. The infectious diseases are derived only from sources consisting of infectious persons (or animals). Persons infected externally only, external carriers, are not *sources;* they are merely *routes* of infection like water, milk, food, flies, and contact in general. The internal carrier is the true source of disease. Such internal carriers are of three classes, incubate carriers who have not yet been sick;

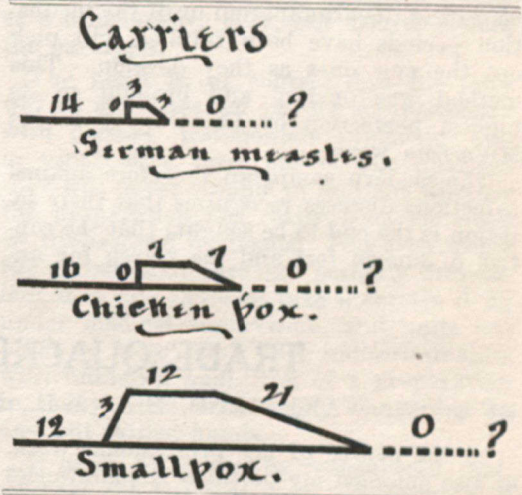
*Of course an incubate, because he has usually been in recent contact with the infected person from whom he derived his infection, may be an external carrier for a brief period as well as an internal carrier. Furthermore, the measles or scarlet fever incubate, while not infective during incubation, is extremely likely to cease being an incubate and become a lesionate. But the scarlet fever or measles incubate is not an internal distributor during the period while he is still an incubate.

decubate carriers, who have been sick, but are now well; and lesional carriers, who actually present lesions, the result of the development of the germs they carry. These carriers are not necessarily distributors: incubate carriers we know are distributors in some diseases, notably certain mucous membrane infections like the acute intestinal infections, diphtheria, pneumonia, gonorrhea; but are not distributors in others, notably measles proper, scarlet fever, smallpox, chickenpox, German measles, etc. Decubate carriers we know generally only as distributors.

Of all conditions which furnish carriers the lesional conditions are the most fertile in germs, the most facile in germ distribution, the most easily recognized, the most easily controlled. Furthermore, and this is of very considerable importance, the lesionates from the very solicitude of the care they require and receive because of the existence of lesions, come most closely in contact with their immediate associates, and are, therefore, prone to give rise to new distributors of all classes. As the lesional period is the highest in infectivity, so the lesional distributor is the centre of the infectious army we have to fight. On the lesional period centre both incubation and decubation: and on the lesional carrier centre both incubate and decubate distributors.

In the campaign against infectious diseases there is but one end—to abolish the enemy. This may be by a frontal attack on the lesional carriers or a flank movement on incubates and decubates. But all methods lead to the same end. Wherever one begins to follow the ramified threads of infection, the disentangling of the mesh always involves these three classes. Plunge in anywhere; to abolish an enemy always means the death or capture of every individual finally. But the easiest, simplest, most direct method is to go to the lesional carriers and to work out from them into the zones of infection which surround them until all incubates and decubates, all mild, unrecognized and concealed cases are successfully located, labelled and held to prevent further damage.

The relative infectivity of the incubates and decubates must be estimated with circumspection. As in war, the relative efficiency of the individual fighter must not be confused with the number of each kind which exists. The Ghurka, man for man, is many times a better fighter than the Hindoo. But one thousand Hindoos can do much more damage than one Kurka. So the typical, well-marked lesional carrier is the worst potential distributor we have, but, because often recognized and isolated, does less extensive damage than the typical lesional carrier, the unrecognized, mild, or concealed case, which runs at large. On the other hand, the extrernal carrier, the person who comes in contact with such cases, is individually a very poor distributor, for a very short time. But he is so numerous that, despite his short life, and weakness, he is a large factor in close, direct, immediate distribution although



generally quite negligible as a long-distance operator. The incubate who aborts, ceasing to be infective before lesions have time to develop, is also almost negligible, except at close range. Numerous as he is, his fighting value as an individual is very low. The prolonged incubate, on the other hand, is a much more serious proposition. Like a man-eating lion, he is rarely recognized as such until he has made a killing. The decubate is as dangerous as the incubate. There is generally one for every lesional carrier, in diphtheria, influenza, etc., and the intestinal infections, and although he can and ought to be readily recognized and followed up, yet he often slips away. Under proper epidemiological methods, however, the injury a decubate does can be prevented by the simple and perfectly possible

process of maintaining surveillance over him.

The immediately practical points concerning these four diseases are these:

The apparent fact that distributors in scarlet fever and measles are always lesionates permits the handling and control of these diseases on lines closely paralleling those used in diphtheria, but of even more simple and direct application: in diphtheria, cultures are needed to detect the distributor: in scarlet fever and measles, a mere glance at the mucous membranes. If a school has an outbreak of diphtheria, cultures from all present detect the guilty party and negative persons may continue attendance safely. In scarlet fever and measles, examining the children's throats, etc., will pick out existing distributors and repeating the examination until the incubation periods have been fulfilled will pick out the new ones as they develop. This method was devised and brought to its highest perfection by Dr. Chesley in his Minnesota work.

The modern campaign therefore against infectious diseases recognizes that their solution is the end to be sought; that the control of known foci and the search for unknown foci are obvious necessities to this end; that these foci are simply infected persons (or animals); that the infected persons can be divided for campaign purposes into classes according to their importance, distribution and ease of recognition; that the factors of relative infectivity of the different classes, on which their relative importance depends, are numerous and intricate, but in sum total indicate the lesional distributor as the first point of attack; that the logical method is to begin with the recognized, reported, frank case but always to extend the investigation to include the mild, unrecognized and concealed cases; that beyond these lesionates, are the incubates, decubates, and external carriers, varying in number and importance, but all presenting ready methods of recognition, if infectious diseases are under proper constant supervision; and less ready but quite possible methods, even where proper surveillance has not previously been carried out; finally, that the "carrier problem" is but an extension of the already existing problems, adding but little to the difficulties and ready to disappear, with the others, when real control of infection is once established.

TRADE QUACKERY IN MEDICINE

BY A. W. WAKEFIELD, M.A., M.D., B.C., M.R.C.S. (ENG.), L.R.C.P. (LOND.).

In the course of my professional work, as also amongst my personal acquaintances and in other ways, a large number of cases have come under my observation in which the taking of different sorts of patent medicines has caused very serious consequences of one sort or another. My attention has been therefore naturally directed towards this matter.

I first examined the nature and wording of many patent medicine advertisements, as seen in most magazines, newspapers, etc., and I realized the very evil effect these must necessarily have in misleading many of the public. On looking still further into the matter, I was deeply impressed with the altogether dreadful consequences of this quack medicine trade, organized, not for the public good, but for money-making purposes only, and sustained only too often by false and fraudulent statements calculated to trade upon the notorious credulity of the public in such matters.

A number of convictions have taken place in Britain, in Canada, and in the United States, but the evil still goes on, encouraged by the ignorance and apathy of the public, of religious and social workers, and even of a large part of the medical profession.

Very few persons, indeed, realize the magnitude of the evil. And the press, profiting largely by these very advertisements, is obviously unlikely to expose the fraud. In fact, in some parts of the United States at any rate not only has the press refused to ventilate the matter for the public good, but it has even done its very utmost to repress all the efforts of references to acquaint the public with many disreputable facts connected with this trade. The deeper I have looked into the matter the

more deeply have I been impressed with the dangers of this evil, and I therefore feel it to be my duty to express the nature of the fraud to the utmost of my ability.

Acknowledgements and thanks for various facts and statements contained in this article are due to *The Public Health Journal, The Ladies' Home Journal,* the British Medical Association's *Secret Remedies,* the American Medical Association's *Nostrums and Quackery,* and to certain personal friends. Otherwise the facts and statements have come under my own personal knowledge.

Before considering the objections to patent medicines in detail, it will be well to discuss a few points of general interest in this connection. Patent medicines are of two classes: Firstly, those sold only to the medical profession; in these cases the ingredients are known to the practitioner and he can prescribe them as he thinks fit. This class is under medical control, and therefore does not concern us. The second class consists of those advertised and sold directly to the public. Only this class is here dealt with.

It must not, however, be supposed that all preparations sold only to the medical profession (ethical preparations, as they are called) are blameless. Even in this line there is a great deal of fraud, and efforts are continually being made to trick the unwary physician. For instance, one method is to advertise a new preparation as ethical, send round free samples to physicians, and then later, when a certain number of testimonials have been raked in from unthinking physicians, to advertise it direct to the public as "endorsed by all the leading physicians," etc. In some cases these medical testimonials have actually been forged.

Another favorite dodge is to advertise a preparation ethically under a certain name as a specific cure for some specific condition, and to the public under a different name, as a cure for more than that particular condition. "Hydrocine," a preparation got out by a certain Dr. Chas. P. Roberts (whose resignation, by the way, was demanded by his Medical Society, but was refused, necessitating the institution of legal proceedings for his expulsion), is a good example of this sort of thing. His preparation was first boomed to the medical profession as a certain cure for all forms of tuberculosis. After a time he and his partner, one Getsinger, fell out, and Getsinger who apparently retained possession of the preparation, re-issued it under the new name of Oxydase, and this time direct to the public, who are told that it is "steadfastly prescribed" by "prominent and thoroughly reliable physicians," and that it is not only a cure for all forms of tuberculosis, but is also valuable in "typhoid and germinal blood diseases," and whooping-cough. Still another example of this kind of thing is a preparation which, under the name of Aiesol was advertised to the medical profession as a consumption cure, and to the public under the name of Re-Stor-All, where, according to one of the testimonials published, it figures not only as a consumptive cure, but also as a cure for paralysis!

The point is, of course, that the laity will be much readier to buy a preparation with doctors' testimonials appended, and in ninety-nine cases out of one hundred they will never trouble to find out whether the preparation has really been endorsed by the medical profession. But even where the claims made are not actually fraudulent it is one thing to take a certain drug under medical supervision, and quite another to dose one's self indiscriminately with unknown quantities of a preparation in many cases exceedingly dangerous in any but skilled hands.

It must, of course, be remembered that, whether the business done is legitimate or morally illegitimate, every patent medicine is definitely a money-making scheme. Otherwise there would be no advantage in patenting the name or in keeping the nature of the ingredients, so far as possible, a secret. This element of secrecy and mystery in medicine has always appealed to the public, and it is well known that otherwise shrewd and capable persons are often gullible in this respect. The patent medicine vendors know this, and by different clever devices trade on this common weakness in human nature. The next thing to remember is that no useful drug, remedy, or prescription discovered by a reputable medical practitioner, is ever patented or kept secret to be exploited for his personal profit instead of for the common good. It

is most strongly opposed to the ethics of the medical profession to exploit in this way any discovery for personal gain. There are instances too numerous to mention of remedies given freely to the suffering public by the discoverers when fortunes might have been made if a patent had been taken out. I need only mention chloroform, antiseptic surgery, vaccination, tuberculin and "606." Therefore, any person advertising the sale of patent medicines and calling himself a doctor, is either claiming a title to which he has no right, or he is violating one of the first principles of medical practice. How can any person be willing to trust the health of himself or of his family to such a man?

Next, we must remember that in order to sell a large quantity or make much money, it is necessary to dupe the public to the greatest possible extent, and it will be shown later how money, energy and ingenuity are not spared to effect this, even at the expense of honesty and truth. When such gross deceit, trickery, and dishonesty have been proved in so many cases already investigated, is it reasonable to believe the advertisements of similar concerns not yet exposed? Moreover, these plausible advertisements (including many of the testimonials) are made out by men trained for years in gulling the public. "Dr." Hale, for instance, has four times been convicted of grand larceny, obtaining money under false pretences, or on similar charges in connection with various quack medicine concerns. (*Nostrums and Quackery*, p. 15.)

A certain number of testimonials are no doubt genuine, but it is necessary to remember that the very large majority of human ailments cure themselves quite independently of medicines. Moreover, many persons are open to the "faith cure." I know of a case in London where a man was given a bottle of some rich, nourishing substance. On his next visit he reported that it was fine medicine, "and as for them beetles, they is that nourishin'." On investigation it appeared that he had left the cover off, the cockroaches had crawled in, and the patient, thinking them part of the medicine, had taken them along with the rest. Yet this man's testimonial to the efficacy of cockroaches would hardly carry much weight with the thinking public.

Let us now consider, firstly, the expense of these drugs, then the unscrupulous manner in which their properties, or alleged properties, are advertised, and, lastly, the dangers arising from their use.

The extract given below is taken from the "form" letter sent out by a Chicago broker. (*Nostrums and Quackery*, p. 15).

"You doubtless know of the tremendous success made by the Antikamnia people of St. Louis, which has made the originator many times a millionaire."

The following extracts refer to a patent tablet much advertised for headaches, neuralgia, rheumatics, and growing pains of children, painful menstruation, fatigue, and weariness, nervous sleeplessness, painful aching pains of athletes and cold in the head:

"Our tablets are made under contract. They cost us 65c per 1,000, and after boxing and preparation for the market bring us in $13.40 per 1,000. You are no doubt acquainted with the splendid profits made on patent and proprietary medicines of this kind."

"The biggest fortunes in St. Louis have been made on patent medicines."

"Profits in this business are far out of the ordinary and 400 to 600 per cent. is only normal. This is true of every patent medicine of this nature."

I am told by a leading chemist that many persons come to him to buy a patent preparation known as "Zam-Buk." This, according to the analysis made specially for the British Medical Association (*Secret Remedies*, 1909), contains nothing more than a little oil of eucalyptus, resin, hard and soft paraffin, and coloring matter. The total ingredients of an ordinary box of this ointment at wholesale prices cost about half a cent. The retail price of a box is fifty cents. A similar box of ointment, containing the same ingredients, if used in any quantity, could be made up and sold by any chemist or druggist for ten cents, or at the outside fifteen cents, leaving him ample profit. Whereas from Zam-Buk he gets only a minimum profit, nearly all of which goes to the makers (30 per cent. ad. val. going to the Government as duty). This preparation is advertised and, I am told, largely used for piles. I think most medical practitioners will agree with me that the standard British ointment

of galls and opium is infinitely better for this condition. A box of this, similar in size to that containing Zam-Buk, costs 5c. Moreover, no trained person being not either a fool or a knave would ever presume to recommend indiscriminately even the B. P. ointment as a sure cure for piles. For, firstly, there are many cases of piles which cannot possibly be cured by any ointment; and, secondly, untrained persons cannot possibly distinguish piles from various other conditions which require very different treatment.

Travelling through the country, I am told by very many persons that they have been taking "Dodd's Kidney Pills," and I often see large numbers of such boxes lying about the house. These pills, according to the most reliable authority above quoted, contain minute quantities of cascarrilla, jalap, potassium nitrate and sodium bicarbonate—all simple and cheap drugs. They are made up into pill form with hard soap, paraffin and wheat flour, and colored with tumeric. The cost of all these substances in an ordinary box of 35 pills is about two cents. Such a box is sold retail for 50 cents, leaving only a minimum profit to the chemist or trader. A box of similar pills, if in large demand, could be sold by any chemist for about 25 cents, giving him a good margin of profit. The obviously untrue statements on the wrappings of the box will be dealt with later.

Again, a popular brand of pills is that advertised as "Dr. William's Pink Pills for Pale People." These consist of very small quantities of sulphate of iron, potassium carbonate, magnesia, liquorice and sugar, all very simple and cheap drugs. The cost of the ingredients of an ordinary box containing 30 pills is about one-fifth of a cent, yet such a box is retailed at 50 cents, with only a very small profit to the retailer. Similar pills, which are not patented, are standardized by the British Pharmacopeia and sold as "Blaud's Compound Pills" at 7 cents or less a dozen. Moreover, the "British Medical Association" states that the "Pink Pills" are "of lower strength than usually prescribed, and, to judge by the proportion of iron that was found to be in the higher state of oxidation, very carelessly prepared."

In the same way the retail cost of a bottle of "Mother Seigle's Curative Syrup" is 75 cents, while the ingredients cost less than a cent.

Only the other day a poor woman came into a St. John's (Newfoundland) store and threw on the floor 57 empty boxes of "Dr. Bevel's Salve" for eczema. For each of these she had paid 25 cents ($14.25 in all). She said they were guaranteed to cure her if she used enough, but they had done her no good at all. This instance demonstrates also the easy way in which confiding and ignorant persons are taken in by these unscrupulous advertisements. Moreover, the callous cruelty of these extravagant claims to cure the incurable or to treat obscure diseases more ably than those who have made a life study of diseases, is enhanced by the fact that the dupes of these impostures are in many cases the very poor, who are unable to afford even proper nourishment.

I am told by a well-known outport clergyman, who, owing to his isolation from any medical man, is the local "doctor," that he has known many cases of eczema made much worse by patent medicines bought in St. John's and guaranteed to cure eczema.

Some years ago a man calling himself "Professor Herman" came to this country and is said to have made considerable sums of money by the advertisement and sale of patent medicines. I am told that he sold "medicine" to his dupes at $1.20 a bottle, and that when he left his town he left two buckets full of this "valuable medicine" behind. There was probably about $100 worth of medicine at "Professor Herman's valuation, but nevertheless this was not worth packing and freight!

The above are only a few instances picked out at random. Many other patent preparations give a similarly vast profit to the makers, while the retailers make only a minimum profit.

Let us now consider the unscrupulous manner in which these preparations are often advertised, in many cases the untruths being so obvious that any educated person might recognize the attempted deception. It must be remembered, however, that there are many people entirely without any medical knowledge, and only too often such persons are deceived into believing that some expensive patent preparation can cure advanced heart or kidney

disease, or far gone cases of consumption, etc., when it is quite obvious that a cure is impossible.

For instance, "Dodd's Kidney Pills" are advertised as being "a positive cure for kidney diseases; cures (sic) rheumatism, Bright's disease, diabetes, back-ache. . . . Dodd's Kidney Pills will cure any form of heart disease." These statements are obviously ridiculous in the extreme. How can the diseased valves of a heart, or a kidney shrivelled up with long-standing Bright's disease, or a bad case of diabetes be cured? Persons with some knowledge, and with experience of the all too common practice of exaggeration, no doubt discount such statements. But persons living far off in outports, far removed from medical aid, are inclined to clutch at any straw, and to throw away their savings on these patent medicines, and to put off going to a medical practitioner to find out what is really the matter with them, by taking these untrue statements at their face value.

"Zam-Buk" is advertised as being "a sure cure for piles, eruptions, blood-poison, cuts, burns and all skin injuries." This, or any other ointment, will no doubt be of use in early cases, although most of these conditions, if not too extensive, cure themselves. But to state, or even to infer, that any one of these conditions, if in an advanced stage, can be surely cured by "Zam-Buk" or any other salve is obviously misleading and absurd.

Another exceedingly fraudulent and mischievous advertisement now lies in front of me. It reads: "Minard's Liniment Cures Diphtheria." In such a disease as diphtheria the delay of a single day may very well mean death; proper treatment, applied early, life. Such advertisements, therefore, tending to cause delay, are exceedingly dangerous. A medical officer of health tells me that he has known many deaths from diphtheria following improper treatment by Minard's Liniment or other similar preparation, when proper medical treatment, applied early, would in all probability have resulted in complete cures.

"Therapion" is advertised to "remove all discharges" (irrespective apparently of cause), "and it purifies the whole system through the blood and thoroughly eliminates all poisonous matter from the body. "What a splendid cure for, say, tuberculosis of the back bone!

Advertisements containing such untruthful and impossible statements are exceedingly common, and one might almost generalize that any preparation advertised as a sure cure for many different diseases is *ipso facto* a "fake."

In some cases readers are led to suppose that the active principle of the patent preparation is an expensive product of some strange mysterious plant, whereas, when subjected to scientific analysis the preparation is proved to contain nothing but well-known, simple, and inexpensive drugs. In other cases the statements as to the ingredients are absolutely incorrect. For instance, "Mother Seigel's Curative Syrup" is said to be "a highly concentrated, purely vegetable compound," whereas in reality it contains a mineral acid, and out of 173.7 parts 100 are water and 60 treacle.

Careful analysis of "Veno's Seaweed Tonic" fails to discover any trace of seaweed.

Another device which has recently been employed by some cunning makers of patent medicines, and which appears to me to demand exposure, is to advertise that prescriptions will be sent free to any persons suffering with certain symptoms who care to apply. There is often the picture also of a venerable, philanthropic-looking greybeard, who professes to have received incalculable benefit from this same prescription. No money has been paid, the prescription is free, and not until the bill is being paid to the nearest chemist does the unfortunate dupe realize that he has been caught. For the prescription includes some expensive patent preparation.

Another method of advertisement commonly employed is to publish letters from patients purporting to have been cured by means of the preparation advertised. While some of these letters, no doubt, are genuine, others are so grossly misleading, to put it mildly, that it would be impossible to say without thorough investigation whether gross fraud or crass ignorance is to blame for the ridiculous statements made. As an instance of this type, I may quote from an advertisement now lying before me, the sentence: "Doctors could

not help him, but gin pills did." A letter follows this sentence, containing such absurd statements that to any medical man its untruth is obvious. But, unfortunately, many people cannot recognize this and are therefore liable to be duped.

A few further facts concerning testimonials advertising quack medicines may be of interest. A cure for consumption was recently advertised, having attached six testimonials alleged to be copies of letters received from grateful consumptive persons who had been cured by this means. These six testimonials were investigated with the following results: Three of these letters, written by persons professing to have been cured by this fake remedy, had been signed by persons who had *died of consumption.* In each case the advertisers went on using these very "testimonials" long after—in one case two years after—the writer had died from consumption. In another case no person with a name resembling that signed to the letter had ever lived at the address given. In other words, the letter was a complete forgery. The other two letters had been signed by persons who were found to be in good health, and in whom a careful examination —both of the person and of the history—failed to afford any evidence whatever of past consumption.

The face value of these testimonials was very high. They appeared to afford good evidence of the value of this "consumption cure." What was the real value? Absolutely nothing, as regards the fake remedy. On investigation, however, these testimonials gave evidence of the unscrupulous, if not criminal, conduct of the promoters. Those who bought this remedy, therefore, entrusted their lives, or the lives of their dear ones, into the hands of grasping and unscrupulous men.

I will now explain how these testimonials are often obtained.

My readers may not know that this getting of testimonials is a regular trade. Those who make their living in this way are known as "testimonial-brokers." They go to work in different ways, but the most paying business is the getting of testimonials signed by well-known men. This is accomplished by a variety of different tricks. In many cases the public man does not realize what he is signing, has actually never tasted or tried what he is recommending, nor does he know very often anything whatever about it. Many a time he does not even know that his name is being used, and when this is pointed out to him he has at once demanded its withdrawal.

The following quotations are extracts from the letters of one of these "brokers" in the United States: "Confirming my talk with Mr. ——, I will undertake to obtain testimonials from Senators at $75 each, and from Congressmen at $40 on a prearranged contract. . . . . A contract for not less than $5,000 would meet my requirements in the testimonial line. . . . I can put your matter in good shape shortly after Congress meets, if we come to an agreement. . . . We can't get Roosevelt, but we *can* get men and women of national reputation, and we can get their statements in convincing form and language."

Who gets this seventy-five or forty dollars? The following extract explains:—

"The knowing how to approach each individual is my stock-in-trade. Only a man of wide acquaintance of men and things could carry it out. Often I employ women. Women know how to get around public men. For example, I knew that Senator A——— has a poverty-stricken cousin who works as a seamstress. I go to her and ofter her $25 to get the Senator's signature to a testimonial. But most of it I do through newspaper correspondents here in Washington. Take the Senator from some Southern State. That Senator is very dependent on the Washington correspondent of the leading newspaper in his State. By the dispatches which that correspondent sends back the Senator's career is made or marred. So I go to that correspondent. I offer him $50 to get the Senator's testimonial. The Senator may squirm, but he'll sign all right. Then there is a number of easy-going Congressmen who needn't be seen at all. I can sign their names to anything and they'll stand for it. And there are always a lot of poverty-stricken, broken-down army veterans hanging around Washington. For a few dollars they'll go to their old army officers on a basis of old acquaintance' sake and get the testimonials."

Personal enquiry a short time ago by one much interested in this subject, amongst a number of famous persons whose names were attached to such testimonials, confirmed these facts. The following is an extract from one such reply:—"A few years ago I saw my name used as recommending ————. I wrote to the parties and forbade its use. . . . I told them I had never authorized it in any way, and that I had never seen the article, and knew nothing about it."

The great Dr. Koch, when asked about a testimonial advocating "Sid. 01" for tuberculosis, advertised by the company, and purporting to have been given by him, replied that the testimonial had not been given by him, and was a complete forgery. (*Nostrums and Quackery*, p. 499.) I could quote from similar replies, some, however, couched in stronger language.

Now let us consider the testimonials signed by persons unknown to fame. It is worthy of note that the addresses of these people are generally at a great distance from the place where their testimonial appears. In other words, investigation is impossible, or at best very difficult. However, some time ago a full investigation was made of a number of these testimonials, and the following is taken from the report of the investigation: "The first was that of a woman who, I found on looking up the street and number given, did not exist. As a matter of fact there was no such number in the street. The whole thing was purely fictitious; the "indorsement," name and number of house purely a lie made out of whole cloth. The second was that of a woman who told me she had never used the "medicine" she was advertised to endorse, but that a woman called on her, offered to have a dozen photographs of her taken at the best gallery in her city, and she could have them all free of charge if she would sign the letter, and let her photograph be printed. She did and she got the photographs, but she never had the ailment spoken of in the advertisement and had never tasted a drop of "medicine." The next I found to be a relative of one of the owners of the "patent medicine" which she had endorsed. When I asked if she had ever used the number of bottles spoken of in the advertisement she said, with a smile, "No, thank you. I know what is in it!"

And so on, one fraud after another. In one case, the report says, the woman "had actually taken the medicine; she was in pain, she said, when she began to take it; the 'medicine' soothed her." "So long as I take it I am all right," she said, "but when I drop it the pain comes back. So you see what a wonderful medicine it is!" . . . I had a bottle analysed and the woman examined by a leading physician. The "medicine" contained morphine and the woman had become a morphine fiend! The investigator discovered further that certain testimonial givers, whose names and addresses are published in the advertisement, are under contract with the advertisers of that particular "medicine" to be paid 25 cents for all suitable replies to persons who write to them for further details or advice before beginning that particular "cure." Again, quoting from the report: "The patent medicine concern has gone to her and said: 'For every letter of enquiry you get and will send to us with your answer to it, we will pay you 25 cents as a reward for your trouble.' Of course it is 25 cents easily earned, and the patent medicine concern turns as many enquiries in her direction as possible. In other worlds, 'These women are our monkeys,' said one patent medicine concern, 'the poor fools are made to do our work for us, to pull our chestnuts out of the fire.' Clever, isn't it?"

Those "medicines," of course, are successful—that is, successful financially to the promoters, not physically to the patient—when they are composed of drugs which create a craving for more, such "medicines" are known in the "trade" as "repeaters." "*Cure* rheumatism," said a veteran "patent medicine man," concerning the exploitation of a new remedy; "good Heavens, man, you don't want a medicine that cures 'em. Where would you get your 'repeats'? You want to get up a medicine that's full of dope, so the more they take it the more they'll want."

It is now clear why alcohol, cocaine, acetanilid, and all similar drugs are "favorite ingredients" in all these quack remedies. In the first place, they are very powerful, "soothing" drugs. In the second place they are dangerous "repeaters,"

or poisons which form a drug-habit. These poisonous drugs, however, we will consider later when discussing the dangers connected with patent medicines.

In this connection, however, I wish it to be clearly understood that in my opinion no blame whatever attaches to the newspapers or journals advertising these things, unless the matter is unusually gross. It is obviously impossible for editors and journalists to know all the details of the highly technical products they advertise. In fact, I think the greatest possible praise is due to those of them who refuse profitable advertisements which they might have considered as of too technical a nature to bother about. Moreover, in some cases the advertisements complained of are only on the wrapper or even inside the box.

We now come to the danger of the patent medicine trade, and this, after all, is the most serious part of the whole indictment.

How often do patients come to a properly qualified medical man after suffering for weeks, or even months, while they were trying one after another of the patent medicines; Whereas in many cases the ailment can be quickly cured as soon as the real cause of the trouble is found out.

For, according to my experience most persons completely fail to recognize the real cause of their own illnesses, and in many cases take patent medicines, which only make them worse. For instance, I know many persons who thought they had kidney disease and spent much money on Dodd's Kidney Pills, whereas all they were suffering from was a deficiency of water in the system, and all they needed to put them right was to drink a great deal more water. Again, I have found persons suffering from chronic indigestion and constipation taking strong tonics (often containing iron), which only irritated their digestive organs and increased the constipation. Similarly, I have known babies with colic, due solely to an improper diet, "soothed" with all sorts of "soothing" mixtures, sometimes actually containing narcotics. These strong drugs no doubt quietened the poor little sufferer's cries, but at the expense of dulling its mental faculties, increasing the indigestion, and causing the most intractable constipation from which, with all the concomitant ills, the child may suffer all its life. Moreover, the real cause of the trouble is not removed. I have known a baby seriously ill from this cause, although the mother was an educated woman and ought to have known better.

Most medical practitioners must know of many such cases where persons have taken large quantities of patent medicines totally unsuited to their illness, which, if they did not cause actual harm, at any rate did no good and, moreover, they caused the patient to put off going to the proper authority. This alone is bad, but more than this, in some cases the delay is so long that when recourse is finally had to the doctor, the case is too far gone for cure. I believe many practitioners have had such cases, and myself know of very many, particularly so perhaps in my present work amongst consumptives. It is generally a most difficult matter to persuade a person with early consumption that he really has the dreaded disease. In many cases he only feels run down, and he thinks a tonic or some cough medicine is all that is needed to put him right. In all too many cases such persons go on taking patent medicines until, when they are really forced to take medical advice, the case is far-advanced, perhaps incurable, at any rate only curable with most careful and prolonged treatment. Will the public ever learn that there is no drug which can definitely cure consumption, that *all* "Consumptive Cures," advertised as such, are frauds! The following is a most diabolical example of these "Consumptive Cure" fakes.

I know of a boy in the north, E—— C———, aged about 19 years, who took a fraudulent rubbish called "Tuberculozyne" for seven months before he went to a doctor. Though steadily getting worse, he believed all the advertised cures. When at last he did go to a doctor his case was far advanced. If he had gone at first there is little doubt but that proper treatment would have cured him. The advertisement, after an attempt to horrify the readers by vividly describing the ravages of consumption, says: "Tuberculozyne (Yonkerman), the most wonderful and marvelous medical discovery of the age, cures consumption. . . . After researches lasting for nearly 20 years" (it

would be interesting to know how long the compounder really took to make up the rubbish in the bottles!)," the persistent efforts of Dr. Derk P. Yonkerman have been crowned with success, for his Tuberculozyne treatment has already proved in hundreds of cases to be a specific of almost miraculous curative power. Its healing virtues have been demonstrated in not only the early stages of consumption, but in far-advanced and seemingly hopeless cases as well. . . . Tuberculozyne (Yonkerman) was such a marvelous remedy that when its discoverer first announced that he could cure consumption there were few ready to believe. He had, however, discovered certain salts of copper of remarkable therapeutic value, and its production was immediately subjected to the most elaborate and rigid demonstrative tests. . . . The consumption germs (tubercle bacilli) cannot live in the presence of copper, and as the Tuberculozyne treatment introduces copper into the blood the consumption germs cannot live."

A number of letters were sent from time to time urging the patient to continue the cure—at £2 10d. ($10) a month. Two bottles were sent for this sum, the real value of both together being about five cents! The one contained no copper at all, but consisted of Potassium, Glycerine, Oil of Cassia, Tincture of Capsicum, Cochineal, coloring, Caustic Soda and Water. The other bottle contained the smallest possible trace of Copper Sulphate (1/48 grain in each fluid drachm), Glycerine, Oil of Almond, Burnt Sugar and Water. Yonkerman has never graduated in medicine, but he has graduated at a veterinary college. His advertisement is full of gross lies and his business of gross fraud.

Another man, W—— S——, spent over $40 on patent medicines alone between September, 1910, and May, 1911. He then went to see a doctor, but his case was advanced and, although he improved a little at first, he is now dead. Proper treatment from the start would almost certainly have cured him.

A man, S——— W———, of M——— Harbor, recently sought advice from a medical practitioner in one of our outports. For about a year he had been dosing himself with "Dr." Chase's Liver and Kidney Pills, and Nerve Tonic Pills, also Hemlock. He had thrown away about $20. He is suffering from consumption, and if he had only gone to the doctor a year ago his chance of recovery would have been vastly greater than it now is.

A man no great distance from St. John's is suffering from consumption. A year ago he weighed 180 pounds. During the year he has spent, I am told, over $40 on all sorts of quack remedies guaranteed to cure consumption. Now he weighs 80 pounds and is rapidly failing.

A few days ago G——— P———, of St. L———, in the North, died from cancer. For about a year he dosed himself with all sorts of patent medicines, including "gin pills," of course without any benefit. He never consulted a doctor till a few weeks ago, when it was too late for the cure which might have been effected by operation.

Further comment is unnecessary. Other instances of this evil could be produced in almost any number.

A preparation known as "Mrs. Winslow's Soothing Syrup" is advertised for children teething as "reducing all inflammation—will allay *all pain* and spasmodic action, and is *sure to regulate the bowels.* We have put up and sold this article for over sixty years, and *can say in confidence* and truth of it what we have never been able to say of any other medicine—*Never* has it failed, in a single instance, to effect a cure, when timely used."

Some time ago this preparation was shown to contain morphine, a most poisonous drug, and one universally admitted to be especially unsuitable and dangerous for infants and young children. The proprietors were therefore forced by law to change this, and in their recent preparations use Potassium Bromide instead, a drug not so bad as morphine, but still not desirable for infants. "Soothing Syrups" have been shown to be the direct cause of death in the case of many young children.

Again, some of these patent preparations contain large quantities of alcohol. Some contain up to 45 per cent. alcohol, which is almost as much as whiskey. I have by me a list of 72 patent preparations (mostly labelled "Bitters," "Cordials," or Tonics,"), not one of which contains less than 20 per cent. of alcohol. I know of at least two instances where different per-

sons have definitely bought such quack remedies for the intoxicants they contained. The patent preparation was quite different in the two cases, but in each case the man bought two bottles, drank them off, and of course became intoxicated. It seems to me to be inconsistent that such "fake" remedies should be allowed to be sold in prohibition districts.

Again, the constant use of patent medicines containing alcohol frequently causes a craving for the drug which leads to chronic alcoholism. Such cases are all too common. I have notes of a number of such cases caused sometimes by "soothing syrups" in childhood, sometimes in later life by patent "cough" or other medicines containing alcohol, morphine, cocaine or other similar drugs. I have copies of the most pathetic letters written by the sufferers themselves, or their relations on this matter.

The great danger of a craving for alcohol or other drugs caused by the use of patent medicines is not sufficiently realized by the public. Other patent medicines contain large quantities of the coal-tar preparations, which in many cases are dangerous drugs, being very powerful heart depressants. For instance, a preparation called "Capudine," advertised to cure "headache, neuralgia and all nerve pains," contains 6.30 grains of Acetanilide in each powder. "Hoffman's Harmless Headache Powders" Contains Acetanilide 5.02 grains in each powder.

The quantity of Acetanilide in different "Daisy Powders" was found to vary from 5.7 to 6.4 grains (due to carelessness in making up). These are advertised as being "free from any injurious substance." "Curie Wafers" and Stearns' Headache Cure Powders also contain large doses of Acetanilide, all being above the maximum dose, which is given by the British Pharmacopeia as 3 grains. I am told by a brother practitioner that some years ago he was called to a man dying from heart failure. My informant tells me that he feels confident that this was brought about, or at any rate accelerated, by the man having treated himself for headache with too large a dose of a very similar preparation. I have evidence of quite a number of deaths and serious illnesses, including heart disease, caused in this way by "headache powders."

A well-known outport practitioner recently told me that he has attended many patients for collapse and fainting caused by headache powders. He also told me of a man who had been suffering for some time with symptoms pointing almost conclusively to typhoid fever. The patient, instead of calling in a properly qualified man, bought some "Herbine Bitters," which he took. Exceedingly violent dysentery and hæmorrhage from the bowel followed very shortly. The doctor was called in, but it was too late, and the man died within 24 hours. The doctor, of course, refused to sign the death certificate, and death was consequently certified by some layman as being due to some such indefinite cause as "inflammation."

I know of one man who has spent $10 recently on patent medicines, another who, it is estimated on good authority, has spent $50 to $60 in considerably less than a year. Another man confesses to have spent over $200 on several cases of patent medicines and two "electric belts," which are notorious frauds. An outport practitioner tells me that several persons have told him that they spend $15 to $17 every year for their patent medicines, and that they cannot afford any more to get on the doctor's books! It seems almost impossible to believe that persons can be so foolish as to spend $15 to $17 on drugs that are probably only worth a few cents, and are also probably not suitable for their ailment, when for a third of that sum they could have their cases properly treated by a qualified medical man.

People do not realize that in many cases it is not medicine at all that they need in order to get well, but correct method of living. I was recently told by a man of considerable local influence that the work of a doctor was to give medicine not advice, and that a doctor without any medicine could not possibly be of any use!

When such a delusion is current, is it any wonder that medical men, clergymen, chemists, traders, and postal and customs officials have all remarked to me on the vast quantities of patent preparations imported to this country? In this connection mention must be made of the "mail order" trade in patent medicines, most of which

come from Toronto. The price of one of these packages "warranted to cure" whatever the disease may be is generally $3, but runs up to $5. On delivery of the parcel the purchaser finds himself called upon to pay duty (90 cents on $3). He frequently refuses to pay this and the parcel is returned to the G. P. O. at St. John's There are now over 100 such returned parcels lying there. The patent medicine companies who sent them have twice been notified that on receipt of the return postage these parcels of medicine, etc., will be sent back to them. No notice has been taken, however, and presumably the money-making companies do not consider these $3 parcels worth the few cents necessary for postage.

DIET IN ITS RELATION TO DISEASE

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In dealing with a subject so broad as the relation of diet to disease, it is obviously impossible in a limited time to do more than consider a few points of outstanding importance. Nor indeed would it be in place to attempt a detailed discussion before an association of this kind whose province it is to deal with *general* measures for the mainteance of the public health, or with disease as it affects the community as a whole, rather than with the *individual* or the treatment of *individual diseases.*

As a starting point it is both interesting and instructive to consider the food of different races and communities from the evolutionary point of view. In this way it may be shown that each great advancement in dietary has been coincident with, and conditioned by, progress in other branches of social evolution. A gradual development can thus be traced from the earliest periods when our primitive ancestors lived on wild fruits, roots, birds, eggs, frogs, honey, gum, etc., through the period when recourse to fishing and hunting made a more liberal supply available. This was later further extended by the introduction of cooking, the cultivation of cereals, fruits and roots; the raising of herds and the storage of food against changes of season or the dearth of supply. In fact even up to the present time the dietary of different races has been determined by their geographical, climatic, social, economic and industrial environment rather than by systematic study or teaching. While these factors have been, and will in the future, be further modified by the spread of civilization and scientific knowledge, yet they must always remain of the first importance. ance.

The instinct for self-preservation, the tests of utility, the consensus of experience of large numbers extending over many centuries, the promptings of appetite, the sense of well-being or its opposite, modified as needs be, by the laws of necessity, have all played a part in the process of dietetic evolution. Nor has the scientific investigator undervalued the information thus supplied. By him the dietary of different races, countries or districts may be considered as ready-made experiments on a huge scale, with data to be weighed and interpreted in the light of modern advancement.

As in other matters, however, with the progress of civilization it was early recognized that *experience* and *custom,* though valuable, were by no means unerring guides, consequently, the relation of diet to health and disease began to be more carefully observed and systematically studied. Of special importance are the contributions from early Greek and Roman medicine, so that many of the rules laid down by Hippocrates, Galen and Celsus are followed by us at the present day.

With them close observation, abstract reasoning and shrewd speculation accomplished much, but in the absence of a knowledge of anatomy, physiology, chemistry, physics and bacteriology, their limitations were soon reached; and for many centuries thereafter little progress was made in this department of knowledge.

The first great impetus to the scientific study of nutrition followed the discovery of oxygen by Priestley in 1774 and the enunciation by Larvoisier about 1780 of the law of the conservation of matter.

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Larvoisier, in 1789, brought forward his theory in explanation of animal heat and the part played by foods in the animal economy, viz.: that combustion occurs within the body in a manner analagous to combustion as we understand it elsewhere—that food is to the body what fuel is to fire. These conceptions were the starting point and underlie the modern science of nutrition.

The next great period of advancement followed the investigations of Von Liebig (1813-1871), the chemist, and Von Helmholtz (1821-1894), the physicist and physiologist, the latter of whom elaborated the law of the conservation of energy. These investigators cleared the way for the epoch-making researches of Pettenkofer and Voit of Munich, who published their results in 1856. The former originated the respiration-calorimeter for the purpose of determining the amount of animal heat generated by the body under various conditions. As animal heat arises from the setting free of the potential energy of food by the breaking down of the highly complex molecules into their simple end products during chemical processes of metabolism, so the amount of heat generated was taken as a measure of the amount of material metabolized. By means of the *bomb* calorimeter it became possible to accurately determine the amount of heat generated by the oxidation of various foods in the laboratory. The same amount of energy is produced whether combustion takes place within or without the body. The potential or latent energy stored up in food is, therefore, readily represented by the heat produced during its combustion. This is known as the *caloric or heat value of food,* and varies with the character of the latter. The Calorie has been taken as the unit of measurement and represents the amount of heat required to raise a kilogram of water 1° C (or a pound of water 4° Fahrenheit).

Represented by this unit of measurement the combustion of

1 gm. fat produces	9	calories
1 gm. proteid	4	"
1 gm. carbonhydrate	4	"
1 gm. alcohol	7	"

For the production of a given amount of energy a similar amount of material is required by the cells of different individuals under similar circumstances.

It has thus been calculated that a healthy man at a light work requires about 35 calories for each kilogram (2¼ pounds) of body weight *per diem.* Thus a man weighing 70 kilograms (168 pounds) would require daily about 2500 calories. From rest in bed to extreme hard work, the requirement is variously estimated from 28 to 48 calories per kilogram of body weight. (Rubner). Calorimetric investigations therefore show that during hard work almost double the amount of food is required as during complete rest.

The caloric value of various foodstuffs and the requirements of man under varying conditions of health and disease have been laboriously worked out by a host of investigators, among whom may be mentioned Voit, Rubner, Zuntz, Atwater, Von Noorden, Langworthy, Benedict, Abderhalden, Chittenden and others.

Von Liebig was the first to classify foods into *nitrogenous* and *non-nitrogenous* and the usefulness of this general division is still recognized. The former are utilized for tissue growth and repair while the latter are chiefly valuable for heat production and to obviate the necessity of too much proteid. A suitable dietary requires a certain proportion of each, though as to the essential minimum different authorities are not yet agreed. Voit gives the proportionate daily requirements as—

Proteid	120 gms.
Fat	50 gms.

Carbohydrate to make up 2500 calories.

The greatest difference of opinion exists with regard to the amount of proteid food required to efficiently maintain the nitrogenous equilibrium, weight, and strength of the body. Being essential for tissue growth and repair, if given in amount below the minimum requirement, tissue nutrition necessarily suffers, as the body proteids are attacked to make up the deficiency. When given in excess proteids are not stored up for future use to any considerable extent, but are at once metabolized and thrown off as waste.

Chittenden, in his extensive and excellent experimental work, concludes that nitrogenous equilibrium and general health and strength, may be maintained on from about one-third to one-half the amount of nitrogenous food advocated by Voit, Rubner and others. The settlement of this

much-debated question will have a most important bearing on practical dietetics. From the economic point of view, the nitrogenous foods in proportion to their caloric value are much the more expensive. This is well illustrated by the following comparative table in which is shown the cost per 1,000 calories of representative albuminous, fat, and carbohydrate foods respectively:

100 g. each.	Albumin.	Fat.	Carbohy.	Calories.	Value of 1000 Calories. Cents
Proteid Group—					
Beefsteak	25.8	2.0	0	124	39.11
Roast Lamb	27.0	4.0	0	148	32.75
Lamb Chops	22.6	4.5	0	134	35.08
Beef Stew	30.6	7.5	0	195	14.69
Eggs	12.5	12.11	0.55	166	33.24
Carbohydrate Group—					
Bread	7.06	0.46	56.58	265	2.77
Sugar	0	0	99.75	410	2.85
Macaroni	11.58	0.65	75.21	361	7.62
Sago, Tapioca	1.18	0.6	82.13	342	6.44
Rice	6.18	0.88	78.48	357	4.62
Potato	2.1	0.1	21.0	96	1.79
Oatmeal	15.10	7.1	68.2	407.7	2.31
Fat Group—					
Cream	3.76	22.66	4.23	243	28.99
Butter	0.74	84.39	0.5	790	8.89
Cheese (cream)	24.67	31.62	1.69	402	21.92
Bacon		95.6		889	6.17
Almonds (sweet)	23.49	53.02	7.84	622	14.16
Walnuts	15.77	57.43	13.03	652	13.48

Average cost of 1000 calories of five representative *proteids*.—

	Cents.
Beef steak	39.11
Roast lamb	32.75
Lamb chops	35.08
Beef stew	14.69
Eggs	33.24
	5/154.87
	30.97

Fats—

	Cents
Cream	28.99
Butter	8.89
Cheese (cream)	21.92
Bacon (fat)	6.17
Almonds	14.16
	5/80.13
	16.02

Carbohydrates—

	Cents
Bread	2.77
Sugar	2.95
Rice	4.62
Potato	1.79
Oatmeal	2.31
	5/14.44
	2.88

Represented in another way the purchasing power in calories of 25 cents at current prices may be stated as follows:

Proteids—	Calories.
Beefsteak	639
Roast lamb	769
Lamb chops	712
Beef stew	1701
Eggs	752

Fats—

Cream	889
Butter	2812
Cheese (cream)	1120
Bacon	4051
Almonds	1854

Carbohydrates—

Bread	9025
Sugar	8474
Rice	5411
Potato	10966
Oatmeal	10822

For years past the cost of living in all civilized countries has been steadily increasing. It is estimated that in the United States food costs the consumer the huge sum of twelve billions of dollars annually and a like ratio, no doubt, applies to Canada. If then, it is possible to replace part of the expensive proteid in the common dietary by fats and carbohydrates without the danger of physical impairment, a large reduction in the food bill would be accomplished.

A wiser selection of foods, based on a knowledge of their nutritive values and the purpose for which they are intended, greater care in cooking, and a study of means for the prevention of waste, especially among the poorer classes, would assist greatly in lessening the burden of increasing expense. A study of ordinary dietary would show that a considerable proportion of the outlay is for materials that have little value in nutrition, though many of these, apart from this factor, serve a useful purpose.

From the economic side, therefore, a vegetarian diet might be recommended and has many advocates, especially among the laity. It may frankly be admitted that so long as the essential minimum amount of proteid is forthcoming, it matters not whether it be of animal or vegetable origin, and as practically all vegetarians permit eggs and milk, such a diet is capable of supplying the nutritive requirements of the body. In practical experience, however, several objections arise. In the first place, vegetable proteid is less readily digested and assimilated than animal, is less attractive to the palate, requires a much larger bulk, and consequently, is much more liable to produce digestive disturbance than a mixed diet.

By excluding the large class of animal proteid foods, the diet tends to become monotonous, and it is difficult over a long period to maintain the bodily strength and well-being. It may also be repeated that the diet of primitive people in all parts of the world has always been a mixed diet—the proportions varying with the facilities for obtaining the various kinds of foods. Nevertheless, the general consensus of opinion appears to be that among the most civilized nations, the consumption of animal food, and especially during advancing years, might be greatly reduced with benefit to the general health.

It is thus seen that in arranging a dietary, other factors than its caloric value have to be considered. Not only must there be a due proportion of the different classes of food, but its palatability, its digestibility and capacity for absorption must be taken into account, as well as the needs or idiosyncracies of the particular individual. While the study of caloric values have thrown much light on the problems of nutrition, has stimulated investigation and modified custom, still they must not be too slavishly followed. As yet, they must take a secondary place to practical experience in the use of foods.

Disturbances of health arising from foods might be profitably discussed under the following headings:

1. (a) General excess, or, (b) insufficiency of diet.
2. Excess or insufficiency of each of the different classes of food.
3. The effects of impurities, improper preservation, adulteration, bacterial contamination and animal parasites in food products.
4. Improper cooking or preparation of food.
5. Improper mastication.

Time, however, will not permit of an extended discussion, so one must be content by directing attention to a few points only.

Excessive eating, compared with nutritive requirements is exceedingly common, and is a frequent cause of ill-health at all ages, but especially during infancy and in advancing years. In children we are only too familiar with stomach and intestinal trouble, dilation of the stomach, sleeplessness, enuresis, reflex convulsions, and nervous disturbances from this cause.

In adults, lithæmia, gout, obesity, enlarged stomach, and other gastro-intestinal disturbances, headaches, sleeplessness, nervous irritability, arterial diseases, embarrassed circulation, kidney diseases, are all at times attributable to this cause.

The *irregular* partaking of food for *social* reasons or *custom*, entirely apart from its proper use in nutrition, is one of the commonest and most flagrant violations of the rules of dietary. The ice cream parlors, afternoon teas, or similar functions; the irregular and excessive use of alcohol, the common use of milk as a drink to replace water, where its use as a food is not required, may be mentioned. These and the habit of many people of taking raw eggs, egg-noggs, or artificial foods between meals for their supposed strengthening effect, when the individual is already suffering from an overburdening of the digestion, are some of the more useful means of filling the physicians' consulting rooms. When we consider that all these varied materials have to be disposed of, either to be rejected unabsorbed, perhaps to act as local irritants, or taken into the system to complicate and overstrain the tissue chemistry, even to form dangerous products of incomplete metabolism, the magnitude of the unnecessary burden frequently thrown upon the system is sufficient to appal one.

Even the excessive quantity of fluids frequently ingested is worthy of more attention than is ordinarily given to it. The layman often reasons that if the drinking of water is good—the more he takes the better, and with all the enthusiasm of a convert or faddist, he proceeds to the limit of his capacity. Gastric atony, dilation, overburdening of the circulation with the consequent development of cardiac enlargement, and even the breaking down of compensation—especially in the heart already weak, may result from this cause. Von Bollinger has investigated the effects of excessive consumption of beer in overloading the vascular system as in the "Munich beer heart," and Von Noorden especially has studied the ill-effects of excessive water drinking in both heart and certain kidney diseases, and their work forms a very important contribution to the practical management of these diseases. I do not wish to be misunderstood as condemning the sufficient use of water, but here as elsewhere, the rule of moderation in all things is applicable. The liberal use of water is valuable in stimulating excretion of nitrogenous waste.

After forty years of age when the requirements for tissue growth are absent and the individual has become more sedentary, the nutritive requirements are greatly lessened and food intake should be reduced correspondingly. Men at this time of life would do well to remember the advice of the famous Dr. George Cheyne, who, by dieting, reduced himself from 448 lbs. to convenient dimensions: "Every wise man after fifty ought to begin and lessen at least a quantity of his aliment and if he would continue free from great and dangerous distempers, and preserve his senses and faculties clear to the last, he ought every seven years, go on abating gradually and sensibly, and at last descend out of life as he ascended into it, even into a child's diet."

Special diets or cures, as the Salisbury, the Banting, Milk Cures, etc., have a particular fascination for many people, especially for those given to the pleasures of the table—the sedentary, the idle rich, and the gourmand. The simplicity and monotony of these diets and their low caloric value preventing excess, offers a ready explanation of the benefits that often result from them among individuals of this class. The same class of patients yearly crowd the health resorts from Battle Creek to Carlsbad and by means of regulated diet, exercise, baths and aperients, obtain temporary relief from their self-imposed ills, but too often return with renewed vigor to take on another load and prepare for the next season.

In wasting diseases as tuberculosis, and during convalescence from fevers and other acute illnesses, a more liberal proteid allowance is necessary to compensate for tissue destruction than the minimum before mentioned.

A diet rich in fats—by reason of its high caloric value—is useful in cases of undernutrition and wasting diseases, but in excess often produces digestive disturbance, or if absorbed, is stored up in the body, thus leading to obesity. The latter is much

more likely to occur in those in whom there is a hereditary tendency, and who even in a moderate diet, tend to take on fat. In contrast to proteids, the body has a much greater capacity to store up fats for future use, and a somewhat lesser capacity for warehousing carbohydrates.

The excessive use of carbohydrates—starches and sugars—also tends to produce digestive disturbances and obesity. While the body has a considerable capacity to warehouse this class of foods, the normal limits may readily be exceeded. The liver may fail in its function to store them up as glycogen to be gradually transformed into sugar as the system requires. The blood may thus become charged with the excess of sugar, and diabetes develops. The predisposition of the Jewish race to diabetes is largely attributable to their excessive use of sweets. The treatment of both obesity and diabetes, curative as well as prophylactic, is essentially dietetic.

The question of food purity is one of national importance and nowhere has it received greater attention than on this continent. One may mention in particular the splendid work carried out under the United States Department of Agriculture, and especially the labors of Dr. H. W. Wiley, which will stand as a lasting monument, not only to his capacity as a scientist, but equally to his courage, honesty, and industry. Our own Provincial and City Boards of Health have been doing commendable work, and this great association can exert no more useful influence than by assisting in the education of the people, and especially of our Legislatures and civic authorities to its vital importance, and to urge upon them the necessity for proper organization and liberal expenditure to support those responsible for the work.

Such diseases as Beri-beri, from rice, ergotism from rye, and pellagra from corn, are only of academic interest to the Canadian, but a pure milk supply to save the slaughter of infants, presses for solution upon every household.

The people should know that ptomaine poisoning from putrified meat, sausages, fish, canned goods, ice cream, etc., are all preventable by proper education, inspection, and regulation. The same applies to typhoid fever from infected milk, and oysters, and tape worm and trichinosis from diseased meat. It should be widely known that many of our food products form the best culture media for bacteria, hence contamination must be prevented. The infection in diphtheria, scarlet fever, etc., is frequently carried by them. The addition of preservatives as boric acid, formalin, salicylic acid, sulphurous acid, etc., to prevent bacterial growth has been resorted to by unscrupulous individuals and their deleterious effects have been fully investigated and exposed by Dr. Wiley and others.

Other diseases, as scurvy, rickets, etc., due to improper feeding, need only be instanced to further impress the importance of a suitable dietary.

The relation of improper preservation of food and bad cooking to the public health, as well as their economic importance, is too large a quester to enter upon. The establishment of a department of Household Science in the University is an indication that some, at least, are alive to the need of education in this direction.

I am glad to note that Dr. Chabot is bringing before this meeting the question of the establishment of a Federal Public Health Department. A National Institute of Hygiene in connection with such a department, with proper organization, adequate support, and a sufficient staff of scientific workers in the various branches, to study every phase of public health, conduct scientific investigations and disseminate information to all classes, would repay many fold the necessarily large expenditure involved. Institutions of this sort have been established at the public expense, in some cases supplemented by private enterprise, in Germany, Austria, Denmark, Japan, the Argentine, France, Great Britain, and the United States, and the experience of these countries would be the best guide for us to follow.

Our country is rapidly advancing to her assured place among the nations, our natural resources undergoing rapid development, every phase of industrial and commercial activity is abundantly prosperous. If the greatest asset of any country is a healthy, vigorous, and contented people, then Canada cannot afford to neglect measures having this end in view or lag behind in the march of scientific progress.

Editorial

[Editorials speaking specially for any one association co-operating with *The Public Health Journal* are not published in this Journal until passed by the publishing committee of that association.—Ed.]

QUACKERY

Following our careful perusal of E. A. W. Wakefield's timely article, "Trade Quackery in Medicine," in this issue, we have considered that quackery may be divided into two classes, the absolute and the relative; an absolute quack being one who pretends to a knowledge which he does not possess, or who misapplies his knowledge for purposes of gain—the insincere person, the charlaton. Whereas a relative quack is often the offspring of narrowness in those who apply the term to others, those who fear the shaking of the foundations of their established work; and the term may be thus misapplied to anyone whose clearer more generous foresight, and deeper more human knowledge has gained for him a prominence preceding the approval of his most conservative confreres.

Quackery originated in and is still principally applicable to the profession of medicine; the one of all professions of highest import to humanity, containing the noblest figures, and the one most susceptible to fraud. Its rampant conservatism exists against this susceptibility to fraud, by virtue of necessity.

The question of quackery is one of much moment in matters of public health, and we are glad to have the particular side of it which he takes up discussed so ably by Dr. Wakefield.

INTER ALIA

A good deal of advice given in matters of public health is advice which only the prosperous can take. The ordinary employee, usually at the beck and call of his employer, is often the victim of his employer's ignorance in regard to the conditions of his workroom surroundings. On the prosperous employer, therefore, blame should chiefly be laid for any general ignoring in his business neighborhood of the basic principles of hygiene.

When the body falls into bad habits they produce bad habits of mind, which pervert the whole aspect of reality to the suffer so that he magnifies trifles and sees difficulties where they do not exist; and there is many an employer who complains of the dullness of a trusted employee unmindful that it has a physical cause which might be removed by the exercise of common sense.

This common sense must be exercised in the first place by the employer, whose position gives him the best opportunity to do so; and the employer should in this, as a business investment, consider first his own health, for if he does not look after his own health he is not likely to consider the health of his business lieutenants. We cannot expect the prosperous man of business to be his employees' physician in the regular sense; it is, however, to his interest to make the conditions of the work in which he and they are occupied as healthy as possible—but he cannot do this if he be ignorant or careless of the commonest prophylactic rules.

A regrettable mistake occured in our November issue in attributing the authorship of a special article, "The Rural Health Officer's Relation to Pulmonary Consumption," to the authoritative and prolific pen of our good friend A. P. Reid, of Nova Scotia; William M. Hart, of Regina, Medical Superintendent of the Saskatchewan Anti-Tuberculosis League, being the author.

A Merry Christmas

to you

And a Happy

New Year

CURRENT PERIODICAL COMMENT AND WORKING NOTES

Doctors of Public Health.

"We need more doctors of public health than mere doctors of medicine," says Dr. F. B. Dresslar in "The Duty of the State in Medical Inspection of Schools," published in a *Bulletin of the United States Bureau of Education*. Dr. Dresslar pleads earnestly for the kind of medical inspection that seeks to promote health rather than that which hunts for ill health. "Our system of paying doctors to do something for us when we are sick ought to be largely discarded for the Chinese system of paying them to keep us from getting sick."

Dr. Dresslar concludes that we need vention in the health of its citizens on broad grounds of public policy. He feels that the community has as much right to demand good health in its children as it has to demand that they attend school; as much right to preserve the community against the contagion of disease and bodily neglect as against the contagion of ignorance. The chief asset of any State is physical stamina, guided by wholesome, moral ideals, and broad-minded intellectual power, and Dr. Dresslar contends that medical inspection and health supervision are indispensable agencies for conserving this asset.

In answer to the question, "Has medical inspection as now organized proved useful?" Dr. Dresslar shows conclusively that medical inspection has called attention in a startling way to the danger of school conditions in transmitting disease; it has already lessened actual illness, and consequently secured better school attendance; and, best of all, medical inspection in the hands of carefully trained men with the right spirit has proved to be an educational agent of great value, by stimulating parents to give more attention to food, clothing, sleeping rooms and general home sanitation, and by disseminating better ideals of hygienic living.

It is in this increased knowledge by the people as a whole concerning the personal care of the health that Dr. Dresslar finds the greatest ultimate good of medical inspection. He notes that great numbers of people are still in gross ignorance and superstition regarding health and disease, since many of them constantly attribute to a Divine Providence deaths from diseases directly due to filth. "Our chief duty lies in removing the causes which contribute to physical unsoundness and disease. As long as we herd our children in schools where they must breathe impure air, bend over insanitary school desks, work at books when they need physical exercise, just so long shall we be paying for our own errors."

Dr. Dresszlar concludes that we need health officers whose chief delight is in finding and developing beautiful cases of physical perfection rather than in finding some obscure and rare disease; health officers whose philosophy is based on the gospel of physical vigor, on the sanctity of personal purity and the godliness of clean-living; "doctors of health" in very truth, who will be concerned with exhibiting, not a long list of the physically defective and diseased, but a large list of healthy, well-developed children.

Unhealthy Churches.

"There are many churches which from a hygienic point of view are so unsatisfactory as to impair very seriously their efficiency as places for public worship," writes Mr. J. Osborne Smith, F.R.I.B.A., in the recent issue of the *Journal of the Royal Sanitary Institute*.

The writer points out that churches "are the resort of young and old, not only the strong and vigorous, but also the aged, weakly, and infirm, who ought not to be exposed to the devitalizing effects of a once-breathed, polluted atmosphere or to face the dangerous currents of chilled air which descend from large triangular roof spaces, from windows above the ground-floor arcades, and from lofty ground-floor windows. Experience abundantly proves that neglect of warming and ventilating in churches endangers health."

"The cathedrals and larger churches," he adds, "have ample cubic space, and by judicious warming and occasional opening of doors and windows, especially after services, the interior air in such buildings can be maintained reasonably pure."

Mr. Osborne Smith gives a number of points which should be observed in order to make churches healthy:

Don't put hot-water pipes in channels under gratings in the floors.

Don't cover doorways with curtains.

Don't close all windows or ventilators at the same time; if a southwest gale prevails, those on the north side might be open without discomfort, and vice versa.

Don't fail to warm sufficiently a large proportion of the incoming air in cold weather.

Don't have many supports beneath the seats, so that floors can be readily kept clean.

Don't fail to concentrate warming near entrances.

Don't encourage the use of blinds, curtains, matting, wicker seats, or anything which harbors dust.

The Telephone and Health.

The telephone has been a great factor in improving the health and welfare of the community, according to the view of the editor of *The Medical Review of Reviews*. He says:

"With the development of modern transportation, it was said that the oceans no longer separated America from Europe and Asia, but served to connect them. In a similar way it may be said that telephones have helped to bring physicians and patients together.

"It is striking to note," he continues, "that while the 1911 population per square mile in the United States was 30, the number of telephones per 100 population was 8.1. It is very noteworthy that the United States contains within its boundaries almost three-fourths of all the telephones there are in the world

"The telephone has been a mighty factor in improving the health and welfare of the community. Health bureaus have been able to accomplish their work more rapidly and effectively by use of the telephone. Ambulance service has been developed to a high state of efficiency through the accessibility of telephones in all parts of the community. Rapidity of service, with promptness in phoning, have served to save many lives that otherwise might have been lost.

"The private practitioner, it is true, has suffered a marked decrease in his emergency calls through the recognition of the value of the ambulance service and the ease with which one may be summoned by telephones. In fact, the doctor's 'phone is frequently used to call the ambulance. Only a few years ago the nearest physician was called for minor conditions at all hours of the night. To-day the telephone saves many a long and needless journey. Frequently, because of the knowledge and appreciation that a physician may be quickly summoned by 'phone in case of real necessity, the doctor is not called at all, as some transitory condition has disappeared before morning.

"In contrast to this small loss is the gain through telephone visits in lieu of office calls. Such 'phone visits may be regarded as office visits, on the ground that if telephones did not exist, it would be necessary for the patient to seek advice at the office.

"Undoubtedly the telephone has enabled the knowledge and appreciation that the physician may be obtained after moving from his original sphere of influence, whereas if there were no telephones, such loyalty would have been impossible. Professor Bell and others who followed him in developing the telephone system added greatly to the comfort, happiness, progress and welfare of society, in all of which the physician has enjoyed his share."

Protection Against Disease.

Dr. Doty contributes to the *North American Review* a paper on Modern Sanitation, which we could wish to have generally read and properly appreciated in every community throughout the land. Let us present some of the statements and conclusions in the most condensed form possible.

In the East it is still generally held that it is blasphemous to attempt by human agency to stop the plague which is considered the visitation of God for our sins and to be accepted with humility and resignation. The opposite view was first taken in Europe by authority in the fourteenth century, when Cardinal Gastaldi took charge of the situation in Rome and enforced an attempt at quarantine, supplemented by

greater cleanliness to avert an attack, with the result that only 14,000 deaths occurred in Rome, while 300,000 occurred in Naples.

Gradually these attempts to resist the invasions of epidemics required the force of a system, but it was not till about 1880 that the studies of Koch and Pasteur furnished a scientific basis for modern sanitation by proving the germ theory. Before that we had the Fomites theory under which we quarantined against disease and burned clothes and bedding, fumigating railroad steel and carloads of ice!

Then came the proof that yellow fever was propagated only by a mosquito, a fact that will always remain to the credit of our government to compensate for the Spanish war; on this other facts were built up and a scientific view and understanding made possible.

Modern sanitation urges that cleanliness is necessary to health, but the search continues for the reservoirs of disease and for the carriers of infection. It is now proclaimed that a man apparently in good health may serve as a reservoir for typhoid fever and other diseases—he seems immune to attack, but always capable of giving off infection. Therefore we must look for the reservoir of the germ, and one of these sources has long been found by popular ignorance and a prevailing superstition in our paper money. Dr. Doty declares that money carries no disease germs, and claims that the proof of this is satisfactory—his position has been accepted by others. It may be filthy as well as tainted, but it does not infect us nor do the straps in cars and other articles in common use.

What remains? We must drain the swamps to get rid of mosquitoes. We must exterminate the house fly. Physicians must report all cases of infectious persons. Dr. Doty says it is simply barbarous to confine the healthy in a house where infectious disease has developed—he can carry no danger to the community if allowed to go about his business. The first great need is the active and cordial co-operation of the community with the work of the health authorities. Science can promise us longer life and better health if we will only avail ourselves of the means now offered us by science, and every carrier of disease and disseminator of infection should be promptly compelled to take the prescribed means of prevention — transportation companies as well as the dairies should be taught to obey a call of duty to the best interests of the whole community.

Prevention of Typhoid Fever.

One of the great achievements of the army medical corps is the immunization of the army against typhoid fever, says the United States *Army and Navy Journal*. The prophylactic treatment is mandatory, and the statistics show a material reduction in the number of cases of typhoid fever. During the first six months of this year but seven cases occurred, with one death. In his annual report Surgeon-General Torney says:

Since the last report of this office the typhoid prophylaxis has been made compulsory for the United States navy. The prophylactic has been furnished for this purpose by the laboratory of the army medical school. Steps have also been taken by the department of agriculture and the department of the interior to encourage as many as possible of their field employees to voluntarily accept immunization against typhoid by the use of the prophylactic. A letter was addressed by both of these departments to the secretary of war requesting that the surgeon-general of the army be allowed to furnish the prophylactic to their respective departments for that purpose. This authority was granted by the secretary of war, and the material has been furnished. Recently the same request has been received from the post-office department. Militia medical officers have been encouraged to secure volunteers among the militia organizations. Some of them have been very active in this work. The army medical school has also furnished the prophylactic for their use. The demands for the serum by the army, navy, the militia and the departments mentioned have been so great that it has been impossible to furnish more than a small quantity to civil communities.

It is recommended that whenever it may become necessary to mobilize either the militia or volunteer troops in the field that this measure be made compulsory for them. In case this is done it is believed that it will be impossible in the future for large epidemics of typhoid fever to occur in the United States army. Of course, an occasional case will develop, but typhoid fever will cease to

be a scourge to the army in the future as it was in the past, and will disappear even as smallpox has practically disappeared in armies as the result of vaccination. Among the sanitary achievements of the medical department in preventive medicine since the time of the Spanish-American War this sanitary measure for the prevention of typhoid fever should, it is believed, rank second in importance only to the discovery of the method of transmission of yellow fever.

How to Keep Sick.

So much gratuitous advice has been given with a view of keeping the doctors from making a living that it appears to have provoked a protest by the *Chicago Board of Health Bulletin*, in which it is undertaken to tell the people how they can manage to keep sick in spite of the efforts of health officers and the doctors. Now as actions are credited with ability of speaking in a much clearer language than words, it must be apparent to any who observe what is going on about them that not a few people in every community prefer to remain sick, for their environment and personal habits are such as to maintain an unsanitary condition of surroundings and a malady making practice in living, and it is to these that the bulletin should have gratifying significance.

This advice has been gathered from many sources and is in a number of instances the result of long observation and experiment, and hence those who have a persistent desire to remain sick need fear no failure in the suggestions maintaining the reputation already earned. Here they are:

Keep the windows closed all the time, when you sleep—fresh air will keep you healthy.

Keep the sunshine out of your home—germs do not like the sunshine.

Never take a deep breath—that would give your lungs some needed exercise and, besides, you might rip a button off your vest.

Don't disturb the flies—you'll miss a lot of filth if you do.

Eat any kind of food regardless of its nutritive value—sawdust and excelsior are good "fillers."

Swallow your food without chewing it—your stomach has no teeth.

Eat irregularly—by all means keep your stomach disordered.

Never take a bath—soap and water are enemies of disease.

Never exercise in the open air; let a game of cards in a room filled with foul air be your most violent form of exercise—your body craves exercise and fresh air.

Get very little sleep—your nervous system will soon collapse under the strain.

Drink any old water, the dirtier the better—you'll very often find typhoid in the water.

Keep a dirty house—dirt and disease go hand in hand.

If you get diphtheria don't use anti-toxin—anti-toxin is likely to cure you.

If you want smallpox don't get vaccinated.

Don't be particular about your milk supply—that's a good way to get sick and to keep the baby sick.

Rural Sanitation.

Dr. Charles E. North, of New York, in a paper which has just been issued in *The United States Bureau of Education Bulletin*, entitled "Sanitation in Rural Communities," gives a rather faithful picture of the carelessness which prevails in so many of these communities with regard to matters which intimately affect life and health. For instance, he says:

"Theoretically, life in the country is more natural and healthful than city life. Air is better; food is fresher; there is less noise, smaller tax on the nervous system, and other conditions which warrant the statement that country life is healthier. Man is, in fact, an outdoor animal, and city life in a broad sense is artificial life, but the dwellers in rural districts fail, through their own ignorance and carelessness, to obtain the full benefit of their natural surroundings. Studies of the water supply of farms, both in Canada and in the United States, show that 60 per cent. of the wells are polluted with house and barnyard drainage. The milk supplied, while fresh, too often has its source in tuberculous cows and is produced under insanitary conditions. Disposal of human and animal waste products is commonly primitive, and these products are, as a rule, exposed to flies in a manner that makes easy the transfer of bacteria to the house and to the food of its

occupants. Sleeping with closed windows is common, and house air in the country is often worse than house air in the city. Cellars are damp and improperly drained. The common drinking cup or dipper is a regular institution, and so is the roller towel. Hot water is scarce, and consequently the dish-washing process suffers. As a consequence of these things, even in the country there is an abundance of infectious diseases."

In agricultural regions, Dr. North points out, each farm is almost an independent social unit and its sanitary conditions are largely what the farm owner chooses to make them. That these conditions are not what they should be is amply substantiated by vital statistics. The death rate in the rural districts is only slightly lower than that in urban territory, and the death rate from certain diseases is higher in the country than in the cities. This may be explained by the fact that the health officers are busy in the cities while it requires an epidemic or a hookworm crusade or something of the kind to take them to the rural regions. Hence the farm as "an independent social unit" is left to take care of itself, its owner not infrequently knowing little and caring less about sanitary precautions and having a supreme contempt for bugs and bacteria.

Dr. North does not believe that the subject of public health is too difficult to be taught in the district school. "There is," he says, "no subject that lends itself so readily to the interest of children." The only difficulty he sees is that such work requires preliminary training and few of the country teachers have had the advantage of such training. His article suggests a wide field for valuable public service.

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American City, The (Vol. VII, No. 5)—"A Practical Detail of City Planning," by Felix Hunt; "Intensive Park Development," by Ralph Rodney Root; "Modern Methods of Street Cleaning," by Edward D. Very.

Clinical Medicine, The American Journal of (Vol. XIX, No. 11)—"Bacterial Criminals and Medical Sleuths," by B. G. R. Williams; "The Cleaning of Eating Utensils," by M. H. Evans.

Dietetic and Hygienic Gazette, The (Vol. XXVIII, No. 11)—"Psychology for the Doctor," by George F. Butler; "Note on Dietetic Fads and Proteinphobia," by Frank Lydston; "The Work of a Police Ambulance Surgeon," by Clarence H. Wall; "The Hospital, Dispensary, and Contract-Practice Evils," by Louis von Cotzhausen.

Engineer, The Canadian (Vol. XXIII, No. 18)—"Chemistry of Sewage Purification," by Arthur Lederer; (Vol. XXIII, No. 19)—"Elementary Theory and Principles of Street Cleaning," by S. Whinery; (Vol. XXIII, No. 20)—"A Small Sewage Plant," by H. G. Clark; "Gas as a Means of House Heating," by Lyman B. Jackes; (Vol. XXIII, No. 21)—"Laying a Deep Sewer in Bad Ground," by George Phelps.

Health, National (Vol. III, No. 5)—"Teaching of Dental Hygiene in Relation to National Health and Wealth," by Ernst Jesson; "Poverty and Sanitation," by George H. Gibson; "Protection and Storage of Food in the Home," by Miss F. I. Lansdowne; "Teaching of Domestic Science," by Mrs. F. L. Mather.

Health, Oral (Vol. II, No. 11)—"School Nursing in Toronto, Canada," by Lina L. Rogers; "The Value of Teeth to Children from three to six years old," by Alonzo Milton Nodine.

Heating and Ventilating Magazine, The (Vol. IX, No. 11)—"Health and Ventilation," by Leonard Hill; "Temperature and Ventilation as Efficiency Factors in Mills," by C. E. A. Winslow.

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Journal-Lancet, The (Vol. XXXII, No. 21)—"Our Duty to the Public in the Combat with Tuberculosis," by W. A. Kriesel; (Vol. XXXII, No. 22)—"The New Public Health," by H. W. Hill.

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Medicine, American (Vol. XVII, No. 10)—"Calvin and Servetus: An Episode in the History of Religious Persecution and Scientific Suppression," by John Knott; "Typhoid and Typhoid-like Infections, Together with a Method for the Isolation of the Respective Bacilli," by T. A. Starkey.

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Our Dumb Animals (Vol. XLV, No. 6)—"How Shall We Interest Children in Humane Work?" by Guy Richardson.

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Practical Medicine (Vol. X, No. 11)—"A School of Tropical Medicine in India," Editorial.

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State Medicine, The Journal of (Vol. XX, No. 11)—''The Edinburgh System for the Control and Eradiction of Tuberculosis,'' by Halliday Sutherland; ''Hospital Isolation in Infectious Diseases,'' by Carl Prausnitz; ''Reflections, Old and New, on the Condition of Surface-Water Supply Systems,'' by Professor W. Dunbar; ''The Hospital Ship as a Permanent Unit of the Fleet,'' by D. J. P. McNabb; ''Recent Local Government Board Regulations and Food Reports with some Analyses of Desiccated Milks and Patent Foods,'' by E. Garratt and A. W. Stewart.

REVIEWS AND ACKNOWLEDGEMENTS

[Any book reviewed in this department may be obtained direct from the publishers, or from leading booksellers, or through *The Public Health Journal.*

''The Physiology of Faith and Fear.''

With the object of providing a guide book for the layman in his quest for the truth of mental healing, Dr. William S. Saddler has written under the above title the only scientific work of this character which has so far reached our table. The work, the author says, is based largely upon his lectures on psychotherapy, delivered in connection with his clinic at the Post-Graduate Medical School, of Chicago, and upon certain of his Chautauqua lectures. He not only elucidates the power of mind over body, but also discusses the influence of the body over the mind; Dr. Saddler has long been convinced of the existence of certain universal laws of psychology and physiology which it is believed will serve fully to explain the great majority of supposed mysterious and many of the so-called miraculous cases of recovery from disease. One unique thing about this book is that he separates the study of mental healing from any and all brands of religion. The work is divided into three parts; the first part taking up psychological relations, the second part the physiological relation; the third part being its therapeutic section.—*The Physiology of Faith and Fear, of the Mind in Health and Disease. By William S. Saddler, M.D., Professor of Phsiologic Therapeutics, the Post-Graduate Medical School of Chicago; Director of the Chicago Institute of Physiologic Therapeutics; Member of the Illinois State Medical Society; the American Medical Association;; the American Association for the Advancement of Science, etc. Chicago: A. C. McClurg and Company.* $1.50 *net.*

''Education, the Old and the New.''

We agree with the author of this book when he says that not only the teachers of our Public Schools should study educational works, but also those who direct, and so control any part of our educational system; and by educational works is meant not only books but also educational periodicals. He points out that he would not have added to the mass of literature on the subject of education had he theory alone to offer; but half a century spent as a teacher is his apology for giving these hints from his experience. And at seventy-nine years of age William P. Hastings hs found himself capable of writing a book which demonstrates in regard to its author that fullness of years does not lesson ability.—*Education, the Old and the New. School Management, the Experience of Half a Century. By Williab P. Hastings. Published by the Author. Battle Creek, Michigan.* 1912. *By mail,* $1.15.

''Audel's Answers on Automobiles.''

If you are interested in automobiles we know of no better book for your perusal than that which has come to us under the above title. In the form of question and answer, ''Audel's Answers on Automobiles'' takes up, in the fullest way possible management and points out truly as an underlying principal of such management that one who is a first-class horseman will usually make a first-class driver of an automobile; or, in other words, the man who shows mercy to his beast will show mercy to his car. The book is fully indexed and suitably illustrated.—*Audel's*

Answers on Automobiles for Owners, Operators, Repairmen. Relating to the parts, operation, care, management, road driving, carburetters, wiring, timing, ignition, motor troubles, lubrication, tires, etc., including chapters on the storage battery, electric vehicles, motor cycles, overhauling the car, etc. By Gideon Harris and Associates. Theo. Audel and Co., publishers, London, 7 Imperial Arcade, New York, 63 Fifth Ave. 1912. $1.50.

"Psychology of Conduct."

In concluding eleven well written chapters on the question of the psychology of conduct, Professor Schroeder wishes his readers to remember that it must be our endeavor to develop correct moral ideas, and also to arouse potent moral ideals, but, above all, to secure actual moral conduct, and, furthermore, habitual moral conduct; thus finally bringing about that inner consistancy headed in the right direction, that desirable unity of personality that we call moral character. He believes that the man or women in the teaching profession who keeps such an aim constantly in mind and does his best to bring about its realization, may rest assured that he is doing a life work that is splendidly worth while. The author's aim in this book is to trace conduct to its source and to show briefly how the principals involved may be applied to the actual work of teaching; best of all, it is not written for specialists.—*The Psychology of Conduct Applied to the Problem of Moral Education in the Public Schools. By H. H. Schroeder, Professor of Psychology and Pedagogy, State Normal School, Whitewater, Wis. Chicago: Row, Peterson and Company.*

"The Mastery of Being."

William Walker Atkinson is unique in the treatment of his subject, being and its mastery, challenging without hesitation the older schools of thought and supporting by a strong array of facts and logic his claims that mind is a substantial thing in the universe, that man is spirit and that back of the personal manifestation lies the "totality of being."—*The Mastery of Being. A Study of the Ultimate Principle of Reality, and the Practical Application Thereof. By William Walker Atkinson. Holyoke, Mass.: The Elizabeth Towne Company.* $1.00.

"An Introduction to Psychology."

Wundtian psychology has a wonderful popularity in Germany; this work is an epitome, as it were of the author's larger work, "The Outlines of Psychology," and will prove of much value to the English-speaking student. The five chapters in the book are headed as follows: Consciousness and Attention; The Elements of Consciousness; Association; Appreciation; The Laws of Psychical Life.—*An Introduction to Psychology. By Wilhelm Wundt, Professor of Philosophy in the University of Leipsic. Translated from the Second German Edition by Rudolf Pintner, M.A. (Edin.), Ph.D. (Leipsic). London: George Allen and Company, Limited, 44 and 45 Rathbone Place.* 1912. 3/6.

"The Food Inspector's Encyclopaedia."

This is the only work that we know of published for inspectors with its subject matter arranged alphabetically and dealing so simply and concisely with the things in which they are interested. The author's principal object in compiling the book has been to collect as much information as possible likely to be of value and interest to all engaged in public health work within the limits allowed to a book of reasonable price; he has not dealt with the legal aspect of the subject, the many public health officers through their authorities being already in possession of the different Acts.—*The Food Inspector's Encyclopaedia. By A. Horace Walker, M.R. San. I.; Sanitary Inspector to the Metropolitan Borough of St. Pancras; late Instructor and Lecturer to the Essex, Middlesex, and Hertfordshire County Councils. London: Bailliere, Tindall and Cox, 8 Henrietta Street, Covent Garden.* 1912. 7/6 *net.*

"Foods and Their Composition."

The great importance of dietetics, as Dr. Tibbles points out, from a national point of view as well as from the side of medical science, cannot be too often impressed upon the public; the supply of pure food being the means of establishing the health of the people and the betterment of the human race. Dr. Tibbles believes that a careful study of the chemistry of foods, together

with the chemistry of the living organism, is essential to the subject of foods and feeding and in writing this book he has had in view the ever-increasing demand for knowledge of his subject by members of the medical profession, chemists, and others. The book is divided into four parts, covering chemical constituents of animal and vegetable foods, materia alimenteria from the animal kingdom, materia alimenteria from the vegetable kingdom, condiments, spices and beverages.—*Foods, Their Origin, Composition and Manufacture. By William Tibbles, LL.D., M.D. (Hon. Causâ), L.R.C.P., Edin.; M.R.C.S., Eng.; L.S.A., Lond.; Medical Officer of Health; Fellow of the Royal Institute of Public Health, etc. London: Bailliere, Tindall and Cox, Henrietta St., Covent Garden.* 1912. 18/ *net.*

"Post-Mortems and Morbid Anatomy."

The author has arranged the subject matter of this book in the order in which a post-mostem examination is conducted, presenting a very full discussion of the subject and one that will prove useful and interesting to the laboratory worker, the practising pathologist, and the investigator of pathological problems, as well as, students and practitioners of medicine and teachers of pathology. Its illustrations are original with the author and represent naked-eye appearances. The book is rendered more generally useful by the addition of an appendix containing tables of equivalent imperial and metrical measurements of weight, length and capacity, and, in addition, the laboratory methods of more general utility, both for preserving tissues in their natural colors and for preparing microscopical sections.—*Post-Mortems and Morbid Anatomy. By Theodore Shennan, M.D., F.R.C.S., Edin.; Pathologist to the Royal Infirmary, Edinburgh; Lecturer on Pathology and Bacteriology in the School of Medicine of the Royal Colleges, Surgeons' Hall, Edinburgh; formerly Conservator of the Museum of the Royal College of Surgeons of Edinburgh; Examiner in Pathology and Bacteriology in the University of St. Andrew's; Pathologist to the Royal Hospital for Sick Children, Edinburgh, etc. London: Constable and Company, Limited,* 10 *Orange Street, Leicester Square, W.C.* 1912. 18/*net.*

"Principles of Hygiene."

In the fourth edition, this standard work has been fully revised in conformity with accepted up-to-date teaching, this being necessary in considering the advancement of our knowledge in matters of causation and prevention of disease. The book has been prepared to meet the needs of students of medicine in the acquirement of a knowledge of those principles on which modern hygienic practices are based; to aid students in architecture in comprehending the sanitary requirements in ventilation and heating, water supply, and sewage disposal; and, to aid physicians and health offices in keeping abreast of the times in hygienic practice.—*The Principles of Hygiene, a Practical Manual for Students, Physicians, and Health officers. By D. H. Bergey, A.M., M.D., First Assitant, Laboratory of Hygiene, and Assistant Professor of Bacteriology, University of Pennsylvania. Fourth Edition, thoroughly revised. Illustrated. Philadelphia and London: W. B. Saunders Company.* 1912. $3.00 *net.*

Publications Received for Later Attention.

"Neurasthenia Sexualis." "Personal Hygiene." "Himself." "Food in Health and Disease." "The Task of Social Hygiene." "Hygiene and Public Health." "The Triuneverse." "Love and Ethics." "The Science of Hygiene." "Physiology Made Easy." "Current Educational Activities," "Fresh Air and How to use it."

And receipt of the following publications not mentioned elsewhere in this issue, is hereby acknowledged: "The Educational Review" (for November). "The Canadian Teacher" (for November 1st and 15th). "The Educational Record" (for October). "The New York State School Bulletin" (for August). "The O. A. C. Review" (for November). "Journal of Education" (for October). "United States Public Health Reports." "Practical Medicine" (for October). "The Prescriber" (for November). "The Official Organ of the United Association of Plumbers" (for November). "Critic and Guide" (for November). "The Bacterial Therapist" (for November). "Merck's Archives" (for November). "City of Winnipeg Health Bulletin" (for November). "Conservation" (for November). "Toronto Civic Guild Monthly Bulletin" (for October). "Monthly Bulletin Ohio State Board of Health" (for October). "The Canadian Patent Office Record" (for August). "New York State Department of Health Monthly Bulletin" (for October). "Ohio State Board of Health Monthly Bulletin" (for November). "United States Public Health Bulletin." "The American Journal of Urology" (for November). "The Fruit Magazine" (for November). "The Michigan Cremation Association, 25th Anniversary Commemoration Booklet." Official Canadian Provincial and Federal periodicals.

Meetings and Reports

[Material for this department to appear in any month should be transmitted before the 25th of the proceeding month to *The Public Health Journal*, 43 Victoria St., Toronto, Canada.]

DOMESTIC

The Women's Institutes of Ontario.

Many facts of vital importance to the country at large and to mothers in particular, concerning the welfare of children, were brought out by speakers at the sessions of the 11th Annual Convention of the Women's Institutes of Ontario last month. Dr. A. Backus, of Aylmer, Ont., speaking on "The Physical Development of the Child," declared that the problem of providing for feeble-minded children and making provision against the propagation of the mentally defective generally, was one of the most important questions before the civilized world to-day. She also voiced the importance of proper care and feeding of the child, the importance of sanitation and ventilation of the home. At the age of five years, she said, a child might be sent to kindergarten for a few hours daily, but this should not be attempted when it was younger. She referred to the "miserable" seating accommodation of many schools, stating that the seats of a large number of Ontario's educational institutions were a punishment to children having to use them. They were either too high or two low, and placed the child in such an attitude as to endanger its physical welfare. Curvature of the spine, which had become prevalent, especially among girls, was due to a great extent to this cause. The child should commence physical training when five years old, and should be allowed plenty of romping, climbing, horseback riding, and, later on, rifle shooting, as it tended to develop the muscles of the eye. In concluding her remarks, Dr. Backus emphasized the importance of proper care of the teeth, and referred to methods of development for growing girls. The address was illustrated with stereopticon views showing actual conditions.

"The Mental Development of the Child" was dealt with by Chancellor McCrimmon, of McMaster University, who emphasized the necessity of seeing that the child was given a clear and perfect perception of the ordinary things of life. To be certain that the child had not received a wrong impression of a subject, it should be instructed to give a drawn, written, or oral explanation. He dealt with various stages of the mental development of a child, and said that the influence of the home, which was the greatest institution in civilization, had much to do with the mind of the growing child. Hon. James Duff, Provincial Minister of Agriculture, referred to the responsibilities of the mothers of Ontario, in a brief address. The pioneer mothers and fathers of the province were not properly appreciated, he said, and by the faithful discharge of their responsibilities the mothers of to-day would rear a monument worthy of their pioneer ancestors.

Dr. Helen McMurchy gave an interesting explanation of the "Child Welfare" exhibit which had been arranged for the convention, and Mr. Case, of the Hydro-Electric, explained electrical household appliances.

"Neglected and Dependent Children" was the subject of an address by J. J. Kelso, of Toronto Mr. Kelso emphasized the importance of caring for neglected children, and described the almost unbelievable conditions which existed in the slums. People were living in shelters that were scarcely worthy of the name in the country as well as in the city Governing bodies ought to spend less money on prisons and more on providing proper homes. This, he said, would prevent many young men and women leading lives that constantly filled the reformatories. He told of the great work being done by the Children's Aid Society and similar organizations, illustrating his remarks with photographs showing children as they were received and after living a short time under proper care.

The annual report was presented by the superintendent, showing that the work of the organization was growing rapidly, and that its influence was manifest. An effort should be made during the coming year, he said, to increase the membership to 30,000. The work of the district branch secretaries

was also the subject of considerable discussion. Other speakers at the meeting included Mrs. Goltz, Bardsville; Mrs. J. J. Hinman, Cobourg; Mrs. Stewart; Mrs. Strader; Mrs. Welbourne; Dr. J. W. S. McCullough, and others.

Quebec Board of Health.

A forward step in the matter of dealing with outbreaks of contagious diseases throughout the province will be made, if a recommendation passed by the members of the Quebec Board of Health at its recent meeting receives sanction at the hands of the Provincial Legislature. The method which the members of the Board suggest to deal with the situation is the amplifying of the powers of provincial inspectors to such an extent that, when the latter arrive in a given municipality and find that proper precautions are not being taken by the local authorities in the matter of dealing with the outbreak, the inspectors will be able to assume immediate direction of affairs, and carry out whatever measures they deem proper to cope with the situation. Under present circumstances, the law prescribes that the provincial authorities cannot act in the matter until a delay of forty-eight hours after the municipalities have been notified. In this way much valuable time is lost, and by the suggestion now made it is proposed to deal with the situation in a more effective and expeditious manner.

Under the present system, though it is stated that a delay of forty-eight hours must ensue before the Provincial Board takes action, a much greater delay is met with in practice. Thus, an inspector on arriving on the scene of trouble, and on making an investigation, if he discovers that the local authorities are not taking the proper precautions, will communicate the fact to the local headquarters of the Provincial Board of Health. Then Dr. Pelletier, the executive secretary of the latter body, will write a letter to the municipal authorities, and send this by registered mail. It is only dating from the time of the receipt of this letter that the forty-eight hours' delay starts. Thus, in the case of remote municipalities, it may take from five to six days before the delay is fully completed. And then, time must be allowed for the provincial inspectors to detail officers to the scene. In this way it often happens that from seven to nine days have elapsed, thus giving ample time for the spread of any malady met with. Under the proposed system, remedial methods will be put into effect from the start by the provincial inspectors and no valuable time will be lost.

At the meeting of the Board much business of a routine nature was transacted. Amongst the projected amendments to the health laws is one providing that purulent opthalmia neo-natorum, infantile paralysis and whooping cough, be placed in the list of diseases the existences of cases of which physicians will be obliged to report to the municipal authorities. It was pointed out at the meeting that fully 60 per cent. of the cases of blindness from birth were due to this affection, and thus it was incumbent upon all confided with the direction of matters appertaining to public health to deal with the subject. Whooping cough, it was also pointed out, was contagious, and thus a reporting of cases arising would serve to control outbreaks of the malady. Another project of law would give the provincial authorities supervising control over water systems and sewerage systems in all municipalities in the province. Under present conditions the provincial authorities have a say in the matter of all new water and sewerage systems, and plans and specifications for the latter must be submitted to the provincial authorities for approbation. It is pointed out, however, that in the case of many of the older systems sewerage outlets are situated in certain parts where they contaminate the water supplies of adjoining municipalities, and it is proposed to do away with this by giving the provincial authorities added power in the matter. The proposed amendment to existing legislation follows along the line of resolutions adopted at the recent convention of the Sanitary Services of the Province of Quebec, and the power which it is suggested should be granted the provincial authorities is akin to that conferred on the state authorities of Ohio by the Benson Act, recently upheld by the Supreme Court of the adjoining republic.

Another suggested change to the law, would empower all municipalities to take

drastic steps to protect themselves from the carelessness of neighboring centres in the matter of coping with outbreaks of contagious diseases. The proposed amendment provides that any municipality, being assured that contagious disease is rampant in the territory of a neighboring municipality, may refuse admittance to a citizen of the latter, unless he be provided with a medical certificate attesting to the fact that he is free from infection.

It will also be asked that the powers at present possessed by private physicians in the matter of disinfecting premises where contagious disease has been met with, be considerably restricted, and that all such disinfection appertain exclusively to officers of the municipal Board of Health. This amendment is dictated by conditions met with of late, where it has been found that in many cases physicians have abused the privilege and have been guilty of gross carelessness in seeing to the disinfection of houses. By having all such disinfection carried out by public officers, it is felt that the sources of infection would be better controlled by the public authorities.

In discussing the recent outbreaks of smallpox in various parts of the province, the provincial authorities decided that they would enter prosecution against a physician practising in the Montreal district against whom, it is said, evidence of infraction of the law in the matter of declaring cases of smallpox has been secured.

Dr. J. A. Beaudry, chief provincial inspector, and Mr. Lafreniere, officials of the Board who recently attended conventions of Public Health bodies, made reports of their experiences. It was decided that the exhibit of the Board at the recent Child Welfare Exhibition be amplified and supplemented so as to form the nucleus of a permanent exhibition on matters of public hygiene.

The following report, showing the extent of smallpox throughout the province within the past few months, was submitted by the executive secretary, Dr. Elzear Pelletier:

In July, 29 municipalities sent in reports showing a total of 106 cases; August, 26 municipalities with 103 cases; September, 12 municipalities with a total of 63 cases; October, 16 municipalities with 119 cases; November, up till the 20th, 23 municipalities with a total of 226 cases.

Dr. E. P. Lachapelle presided at the meeting which was attended by Drs. A. Simard, G. P. Bissionnette, G. Bourgeois, C. A. Paquin, J. Hutchinson, J. E. Laberge, Hon. H. S. Beland, Elzear Pelletier, executive secretary, and J. A. Beaudry, chief provincial inspector.

Report of the Ontario Registrar-General.

Mixed marriages are increasing in Ontario, despite the strenuous efforts of church organizations to turn the tide the other way. This is conclusively shown by the recent annual report of the Registrar-General. During the 12 months reviewed the returns show an increase of 2 per cent. in the number of Roman Catholics marrying outside their church. In the previous 12 months there were 7,351 Roman Catholics married, and of this number 1,509 entered into mixed marriages. The number who made mixed marriages last year was only 10 more than in 1910, but the number of Roman Catholics who entered matrimony was but 6,743. Of these, 1,519, or 22.5 per cent., married outside their church.

The Methodist denomination headed the marriage list, with a percentage of 28.2. The Presbyterians followed closely with 20.4, and the Anglicans third with 20.1. The Roman Catholics came fourth with 13.1 per cent., and the Baptists fifth with 6.6. The Lutherans were ahead of the Congregationalists with 3.7, the latter contributing only 1.2 per cent. of the marriage total. Altogether there were 25,807 marriages, an increase of 1,771.

That there is still room for reform in the way of preventing marriages between minors is shown by the total of 5,520 persons under the age of 20 married during the year, or 10.7 per cent. of the marriage total. The number of bridegrooms between the ages of 15 and 19 who entered matrimony was 581, and of brides 4,939.

That age bothers Master Cupid very little is another fact gleaned from the report. Up to the allotted span of life—three score and ten—marriages were frequent, particularly upon the part of the male sex. But 70 was not the stopping point, 72 gentlemen of that age and over

succumbing to Cupid. There were, however, only 13 blushing brides who confessed to 70 or more.

The record of births reached a total of 57,235, of which 2,463 were still births. The births showed an increase of 1,364. During the year 622 pairs of twins saw the light, while six cases of triplets were reported.

The report states that 1,807 children were born out of wedlock.

The death total in Ontario during the year showed a smaller increase than the births, an evidence of an improving general health. The number of deaths was 34,341, an increase of only 802. The cities contributed 12,940 deaths, a ratio of 17.1. The towns of over 5,000 population were a little better off, showing deaths of 2,704, a ratio of 16.6 per thousand.

The campaign against tuberculosis is bringing results, this year's death rate from the scourge being the lowest since records have been kept. Last year there were 2,353 deaths from tuberculosis, a rate per 100,000 population of 92, compared with 127 in 1881, 112 in 1891, and 148 in 1901.

That this improvement has proceeded at a greater pace than the improvement in the general health of the people, is shown by the fact that in 1881 tuberculosis contributed 10 per cent. of the total deaths; in 1911 and 1901 the disease contributed 11 per cent., while last year only 6.85 per cent. of the total deaths were from the "white plague."

Domestic Notes.

The establishment of a forestry branch to take up provincial forest conservation and reforestration has been decided upon by the Ontario Government. Professor E. J. Zavitz, who for several years has been in charge of the Government's reforestration work in Norfolk County, has been chosen as the man to take charge, and his appointment has been announced by Hon. W. H. Hearst.

The members of the conference called together in November for the purpose of discussing the care of feeble-minded persons in Ontario, concluded its deliberations in Toronto by forming a permanent organization, with the following officers: President, Controller McCarthy, Toronto; Vice-Presidents, Mrs. F. H. Torrington, Alderman Perney, Ottawa; Alderman Davey, Hamilton; Mayor Thorpe, Guelph; Secretary, Edwin Dickey. Executive Committee—Dr. Helen MacMurchy, Miss Brookings, Rev. John Inkster, London; C. G. Cole, Dr. Charteris, Chatham; Col. Farewell, Whitby; W. C. Scott, Ottawa; School Inspectors Huff, Chapman, and Mowan; Rev. J. E. Starr, Dr. C. A. Hodgetts, Ottawa; Mrs. A. E. Huestis, Mayor Hartman, Brantford, and the Mayor of Kingston. The founders of this new association considered not only the care of those feeble-minded people which form a part of the population of Ontario at present, but also means to prevent the propagation of that class of the community. They resolved to ask the Legislature to provide institutions in which such persons could be maintained at the cost of the municipalities until they reached the age of 21 years of age, and, after that, if necessary, as the wards of the Government. They also reached the conclusion "that the issue of marriage licenses should be confined to municipal officers—for instance, to municipal clerks; that the Marriage Act should be amended in such a way as to prevent the marriage of a mentally defective; and that the permanent executive should be instructed to press upon the Government the desirability of such legislation."

Notice has been officially given that under authority of sub-section (6) of section 6 of the British Columbia Health Act, the Medical Health Officer of South Vancouver has been empowered to order the cleansing, purifying, ventilating, and disinfecting of houses, churches, buildings, and places of assembly, railway stations, carriages, and cars, as well as other public conveyances, by the owners and occupiers and persons having care and ordering thereof; and that the said Medical Health Officer of South Vancouver has been empowered to visit any house in his district for the purpose of examining the health of the inmates.

By a new arrangement in regard to the teaching in the medical department of the University of Toronto, each student, while clinical clerk, will live in Toronto General Hospital for three weeks.

The amendments to Ordinance No. 26, of horses, cattle, swine, etc., as passed by the City of Halifax Health Board on the 6th day of February, and 22nd day of March, 1912, have been repealed, and the original section (2) substituted therefor.

The recent convention of Ontario Farmers' Institutes and Farmers' Clubs was largely taken up with discussions and addresses dealing with the various ways of promoting the interests of both organizations among the farmers of Ontario. The problem of keeping the young men on the farms was discussed. The promotion of social gatherings and like functions to provide the much-needed amusement met with favor. Representative Smith, from one of Waterloo County's organizations, told of courses of study that were carried on by the farmers, assisted by the local Department of Agriculture, and reported that much valuable knowledge relating to the science of agriculture was distributed in this way. Co-operative buying by the farmers of a community was economical, according to Mr. Pogue, of Simcoe County. It was stated free literature distributed by the institutes, while productive of good, was not appreciated as it should be. The annual fee will remain at 25 cents, as formerly.

There is a movement on foot among the doctors of Ontario to secure concessions from the Provincial Government with regard to the reporting of cases of communicable diseases. The proposition of the doctors is that since they are put to considerable trouble in making returns to the local registrar of all cases of communicable disease they are entitled to receive fees for doing so. At the present time, it is pointed out, the returns made to local registrars are far from being complete, owing to the indifference of attending doctors, principally in the smaller municipalities.

J. Lockie Wilson, Superintendent of Horticultural Societies, in making his annual report to the recent Ontario Horticultural Association convention, advanced a scheme whereby vacant lots in cities should be used as both flower and vegetable gardens. Mr. L. J. Bougner, editor of the Minneapolis Tribune, explained the details of the system as carried out in his city, and showed that it had proven a great success. Not only had it given hundreds of people an interest in horticulture, but the actual cash value of the crop last year was about $60,000. R. B. Whyte, of Ottawa, touched on a subject of much interest in his paper on "Successful Growing of Perennials from Seed Under Ordinary Conditions." He pointed out that the ground, after sowing, should not be allowed to become dry, and that a wet day in September was the best time for transplanting. Professor Macoun, of Ottawa, gave some very useful information on the best kinds of plants and shrubs to grow so as to secure a continuity of bloom in small gardens. W. B. Burgoyne, of St. Catharines, spoke on the management of horticultural exhibitions and the benefits to be derived from them both by exhibitors and visitors. The election of officers resulted as follows: President, Rev. A. H. Scott, M.A., Perth, First Vice-President, J. P. Jaffray, Galt, Second Vice-President, W. J. Diamond, Belleville; Treasurer, H. B. Cowan, Peterboro; Secretary and Editor, J. Lockie Wilson, Toronto.

The appointment of John Bright, of Myrtle, to the position of Dominion Live Stock Commissioner, made vacant by the resignation of Dr. Rutherford some time ago, is understood to have been decided upon. Dr. Rutherford was veterinary-general as well as live stock commissioner, but upon his leaving the service it was decided to divide the office in order that the closest attention might be given to each branch. Dr. Torrance, of Winnipeg, was appointed veterinary-general, and has until now been acting live stock commissioner. The new commissioner is one of the best known authorities on live stock in Canada. He has done much good work in the interests of the live stock industry, both in and out of Ontario, and has been a president of the Winter Fair and a member of the Ontario Stallion Enrollment Board. His wide knowledge of live stock is recognized all over the Dominion, and he has frequently acted as judge at stock exhibitions, having very recently acted in that capacity in Edmonton.

Judge Gunn's report on the recent waterworks investigation in Ottawa has been received. It places the blame for the recent typhoid epidemic in strong terms on the Waterworks Committee, Board of Health, City Engineer Ker, and Medical Officer of Health Sherreff. The Waterworks Committees from 1908 to 1912 are censured for failure to give their duties the consideration warranted by their importance. The Board of Health is held responsible through failure to undertake earlier investigation of the polluted water situation. City Engineer Ker, of Ottawa, is held responsible, in Judge Gunn's report, for the "dismal failure" of the new Ottawa waterworks intake which broke and allowed sewage to enter the city's drinking supply, and Dr. Sherreff, M.O.H., is characterized as a man incapable of filling his position. It is recommended that the city engineer be removed from all connection with the waterworks affairs, that the latter be placed under a commission, and that the Board of Health resign in a body.

Advance Notices, Alphabetical.

Canadian Public Health Association—1913 Congress, Regina. Particulars later.

INTERNATIONAL

Joint Waterways Commission of the United States and Canada.

By means of replies to questions submitted to a group of sanitary experts, the Joint Waterways Commission of the United States and Canada, which was in session in Washington last month, adopted a preliminary programme for an investigation into pollution of boundary waters between the two countries.

The investigation covers only those cases of pollution on one side of the boundary which are likely to affect the waters on the other side of the boundary. Under this limitation the commission investigates the effect of the sewage disposal systems on the waters of the Rainy River, St. Mary's River, Lake St. Clair, St. Clair River, Detroit River, Niagara River, and a part of the St. Lawrence River, together with investigations of the waters in the vicinity of Port Arthur, Fort William, and Duluth on Lake Superior, Saginaw Bay and Lake Huron, and the lower end of Lake Huron, in the vicinity of Sarnia and Port Huron; the lake in the vicinity of Port Stanley, Cleveland, and the bay at the western end of Lake Erie, Rochester, Toronto, and the eastern and western ends of Lake Ontario.

Examination of these waters consists of bacteriological tests, including the bacteria count and qualitative and quantitative estimates. It is expected the investigation can be finished as far as the preliminary examinations are concerned within a year. The Board of Health in Toronto, and the United States Public Health Service will probably co-operate in preliminary investigations under the direction of the commission.

Sanitary experts who assisted the joint commission in drawing up a plan for the investigation were Dr. Allan J. McLaughlin, of the United States Public Health Service; Prof. T. A. Starkey, of McGill University, Montreal; Dr. Charles A. Hodgetts, of the Canadian Commission of Conservation; Dr. J. W. S. McCullough, Toronto; Dr. J. A. Amyot, Toronto, and Dr. G. G. Nasmith, Toronto.

The work of construcing a dam or dyke in the Detroit River for the protection of the Livingston channel will be held up at the request of the Canadian Government pending a report on the project. The town of Amherstburg, Ont., filed objections to the construction of the dyke.

Clinical Congress of Surgeons of North America.

The third Clinical Congress of Surgeons of North America, which closed its week's sessions on November 16th last, after many brilliant displays of professional skill in the hospitals of New York, was distinguished by a broadened attitude of the surgeons in regard to their relations to the public, a change which is bound to bear much fruit.

The interest of surgeons in these conferences has been growing rapidly. The one of this year was the third, the first having been held in Chicago, and the second in Philadelphia. Next year the meeting will

be held in Chicago again, there being only three cities which afford facilities for the number and variety of clinics which have made the last congress of such signal interest. The attendance of surgeons has doubled at each meeting, and yet more surgeons will be at the Chicago meeting next year. But promising as this growth of professional interest is, it is less significant than is the attitude taken by the surgeons towards the public whom they serve.

A feature of the concluding business session was a movement to elevate the standard of surgery and of surgeons in the United States and Canada. It is purposed to establish a special college of surgeons, modeled after the Royal College of Surgeons in England, which shall give a degree supplementary to that of M.D. The project was presented by Dr. Franklin Martin, of Chicago.

The officers elect are: President, George Emerson Brewer, of New York City; Vice-President, W. W. Chipman, Montreal; General Treasurer, Allen B. Kanavel, Chicago; General Manager, A. D. Ballou; Chairman of the Committee of Arrangements for 1913, E. Willis Andrews, Chicago.

International Notes.

In presenting the recent report of the Fly Fighting Committee of the American Civic Association, Chairman Hatch expressed the hope that there may be no fly killing contests. Mr. Hatch pointed out that we cannot insist too much or too often upon cleanliness as the beginning, middle, and end of the fly fighting campaign. "Swat the fly" as a slogan must given way ot "starve the fly." The latter is more euphonious and infinitely more practical. The committee's report made a feature of the fact that in cities in which substantial cash prizes were awarded in no case did the number of flies killed in the whole of a campaign exceed the quantity which could easily have been reared from an average sized pile of stable refuse in the course of a few weeks.

The Nobel prize for physics has been awarded Gustaf Dalen, a Swiss engineer, who is head of the Stockholm Gas Company, and the Nobel prize for chemistry has been divided between Prof. Grignard, of Nancy University, and Prof. Paul Sabatier, of Toulouse University. The value of these prizes is $38,600 each.

The Nobel prize for medicine, which is annually voted for the most brilliant performance in this science each year, has been awarded to Dr. Alexis Carrel, a Frenchman, who has been in the United States attached to the Rockefeller Institute for the past few years. For two years previously he was at the University of Chicago, and before that was at McGill. Indeed, it was to McGill that Dr. Carrel came on leaving France.

On the invitation of Mayor Blankenburg the National Housing Association held the second national conference on housing in America at Philadelphio on the 4th, 5th and 6th of this month. The meeting this year developed into one even more successful than was that of a year ago, when sixty-one cities were represented. At that time the progressive cities of the Middle West had just awakened to the need of clearing out their slums and building good houses for their working population. Since then the south and Pacific coast has awakened, and its delegates were added to those from the other sections of the United States and from Canada. Philadelphia was selected this year, according to a statement issued by the National Housing Association, because it has more to show the housing workers of the country in the way of constructive effort than any other American city. In its multitude of small houses, the absence of tenements, its economical and advantageous lot units, its system of minor streets, its Octavia Hill Association for Improving Older Houses, it is unique. The opportunity for studying these things at first hand is one the delegates from other parts of the country were glad to seize.

Advance Notices, Alphabetical.

American Public Health Association Congress in the fall of 1913 at Colorado Springs, Col.—particulars later.

Council of Nurses' Congress, San Francisco, in 1915. President, Miss Annie Goodrich, New York City.

Civic Association, American.—Annual Convention will be held at Baltimore, M.D., November 19th to 22nd. Secretary, Richard B. Watrour, Union Trust Building, Washington, D.C.

Geological Congress, International.—Twelfth Annual Meeting to be held in Canada during the summer of 1913. Secretary, W. S. Lecky, Victoria Memoriam Museum, Ottawa.

International Congress of School Hygiene, Buffalo, N.Y., August 25th to 30th, 1913; the fourth but the first held on the American continent.

Municipal Improvements, American Society of.—Annual Convention to be held at Dallas, Texas, November 12th to 15th, 1912. Secretary, A. P. Folwell, 50 Union Square, New York.

Medico-Psychological Association, American.—The next annual meeting will be held at Niagara Falls, from June 10th to June 13th, 1913.

Hospital Association, American.—The next meeting will be held in Boston in September, 1913.

Roads Congress, International.—The Third International Roads Congress will be held in London, England, in June, 1913. Secretary, W. Rees Jeffreys, Queen Anne's Chambers, Broadway, Westminster, London, S.W.

League of American Municipalities. The next convention of this league will be held in Buffalo, N.Y., and in 1913 it will likley be held in Winnipeg.

Medicine, International Congress of.—The summer of 1913 will witness the 17th International Congres sof Medicine in London, England. Further particulars regarding this congress will be given later, when received from the Honorary General Secretary, Prof. H. Burger, Vondelstraat 1, Amsterdam. Prof. Burger states that he will be glad to receive any propositions regarding this Congress addressed as above.

Prison Congress, Quinquennial, London, Eng. 1915. Secretary, F. Simon Van der Aa, Groningen, Holland.

Unemployment, International Association for Fight Against. Ghent, Belgium, 1913. American Corresponding Officer, John B. Andrews, 1 Madison Avenue, New York.

UNITED STATES

Kansas Board of Health Report.

The Kansas Board of Health makes an interesting showing in its annual report recently issued. It takes two cities, occupying the same climate, built upon the same typographical formation, and with citizenship of the same kind of people. The cities are about the same size, and enjoy similar natural advantages. The Board does not use the actual names of the cities, but, instead, designates one as "A" and the other as "B."

The city known as "A" spent about $1,75 for each $10,000 of its taxable property to guard against disease—in cleaning up the disease-breeding places in medical inspection in the schools, in enforcing sanitary laws, and so on. City "B" spent $3.12 per $10,000 on valuation. That amounted to about 23 cents per capita, whereas the amount spent by "A" amounted to 13 cents per capita.

In one year there were fifteen cases of typhoid fever for every 1,000 population. "A" had nineteen cases of scarlet fever and "B" ten. "A" had twenty cases of diphtheria, and "B" had four. "A" had nineteen cases of measles, and "B" had fourteen.

Equally as glaring differences are shown in other diseases. In fact, there is no comparison between the two cities in the matter of health. The State Board of Health claims that the smaller cities show still greater discrepancies, and that for every dollar spent in the prevention of disease direct results can be traced.

American Federation of Sex Hygiene.

Those parents and teachers who are interested in the problem of teaching sex hygiene will be interested in the fairly authoritative report on this subject which has been issued by the American Federation of Sex Hygiene.

Just now there seems to be almost too many people rushing into this field. The mother who has begun to cast around for help on this matter is quite likely to be daunted by the multiplicity and unknown antecedents of those who thrust advice upon her. Doctor This and Doctor That are ready, naturally enough, to tell her just what to say. When they differ—and they do differ on many points—how is she to choose?

One answer to the question is for her to follow the suggestions of this report, which is manifestly responsible and cautious. It may be had, we understand, on application to the Federation at 105 West Fortieth Street, New York. It has been compiled by a joint committee of the American Society of Sanitary and Moral Prophylaxis and the American Federation of Sex Hygiene, both of which societies were represented by Dr. Prince Morrow; the New York Association of Biology Teachers and the New York School of Pedagogy.

This committee takes the position that the subject of sex hygiere, as taught to children, has a purely practical aim and no other. In other pedagogical fields the aim is to "satisfy the degree of curiosity spontaneously aroused at any age with just enough more information to protect the child from the temptations sure to come to him." Physiological age groups are indicated; their characteristics are described and a brief schedule is offered—suggestive rather than final—of the sort of biological and botanical information which would be helpful. This ranges from flowers and the lower forms of animal life up to man himself.

It is interesting to see that the committee avoids the temptation to urge the professional teaching of sex hygiene. It declares emphatically that the parents and the regular teachers are the ones who should give instruction on this subject. To have special teachers come in to give it is to defeat, partly, the very objects of the work by exciting in the children the feeling that this subject is somehow separated from the rest of home life and school life.

Report of Virginia State Board of Health.

The annual report of the Virginia State Board of Health, filed recently, is a cheering chronicle of conservation of the people's health. No agency of the State is half so vital as its organized health work. Every expenditure for this deparmtent effects incalculable economy in checking the waste that comes from human lives wrecked or ruined by disease.

Much has been done, and much remains to be done. The inculcation of the simple and practical rules of sanitation is working the extinction of the once prevalent typhoid. Tuberculosis is being rapidly reduced. Sanitary conditions are generally being bettered. The people in ever-increasing number are being taught how amazingly simple it is to ward off the grisly troop of diseases that menace community health. Towns are improving their water supplies and their sewerage systems. School sanitation is receiving more and more attention. Domestic hygiene is striding along. The causes of disease are being eradicated. The infant mortality rate is being lowered, In a word, the supreme resource of the State—the health of its citizens—is being conversed.

Rural sanitation is declared the gravest problem to be solved. It is in the country that the preponderance of our population lives. Facilities for sewage disposal are lacking in too many homes. In some communities the water needed for it is almost impossible to get. Intelligence of the principles of disease prevention is not so easily and quickly disseminated as in the cities and towns. There lies, the report believes, no small situation to be met, and in its great mission of improving rural sanitation the State Board of Health should have the especial assistance of the legislative department.

Chicago School for Study of Prevention of Accidents.

There has been recently established in Chicago a school for the education of both employers and employees in the principles and methods of the prevention of occupational diseases and accidents. The school is in charge of the State factory inspector, whose duty it is, under the law, to see that health and safety devices are adopted.

Beside a laboratory for the study of the causes of industrial accidents and diseases, there is a chemical laboratory, a model rest-room, a model emergency hospital, a museum of pictures and exhibits showing safety devices and a drafting-room for the preparation of plans and specifications for machinery guards; these plans and specifications will be furnished free to manufacturers. There is also a free reference library of 4,000 volumes on factory inspection, occupational diseases and welfare work.

The facilities and equipment of the school are to be supplemented by lectures to foremen, superintendents, and staff physicians of industrial plants and to social workers and other regarding occupational diseases and hazardous machinery.

On the teaching staff of the school is a physician who has made a special study of occupational diseases in this country and abroad, an engineer who is an expert in the guarding of hazardous machinery and a corps of inspectors who are specializing in the problems involved in their work. Working men and women are also encour-

tions in the way to protect themselves or to have examinations made in case they believe they are suffering from diseases due to their occupation, in which case conditions responsible for their troubles will be inquired into and corrected. The bulletins of the department of State factory inspection will be issued from this school and distributed to manufacturers, workers, and others.

Report of South Dakota State Board of Health.

The report of the South Dakota State Board of Health for the past two years has been filed with the Governor. The report declares the common house fly to be one of the worst menaces to health that exists, and recommends the use of screens and sticky paper to reduce this trouble to the lowest possible point. The report shows that of the common contagious diseases for the fiscal years of 1910-11 and 1911-12 the following figures:

In 1910-11 there were 630 cases of diphtheria and 52 deaths; 1,262 cases of scarlet fever, 53 deaths; 767 cases of measles, 15 deaths; 616 cases of smallpox, 4 deaths; 20 cases of spinal meningitis, 12 deaths.

In 1911-12 the report shows 520 cases of diphtheria, 50 deaths; 548 cases of scarlet fever, 16 deaths; 263 cases of measles, 2 deaths; 350 cases of smallpox, 1 death; 9 cases of spinal meningitis, 4 deaths.

This report shows that measles has been the cause of more deaths in that time than has smallpox with aproximately the same number of cases.

United States Notes.

"To love let us add knowledge," may be said to be the watchword of the Kentucky Child Welfare Exhibit, which was held in Louisville last month. Knowing that it is the man that makes the nation and that it is the child that makes the man, the whole country seems to have turned its attention to the well being of the children, the boys and girls of to-day, who will be the men and women of to-morrow. It has always been considered a natural and reasonable thing that children should be loved, but the last two years have shown a remarkable development of interest in all phases of child life, and the Kentucky Child Welfare Exhibit and Conference was the sixth large exhibit of this sort since February, 1911, when New York set the ball rolling with the first exhibition. Chicago followed in May, 1911, and since then similar exhibits have been given in Kansas City, St. Louis, and Montreal, Canada. The Kentucky Child Welfare Exhibit was the first one, however, that represented an entire State, all the others having been confined to the city in which they were held, and it was also the first display of the kind south of the Ohio River.

The St. Louis Health Department has fulminated against heavy underwear. It advises city people to don medium weight underwear for winter. The heavy garment, it says, causes perspiration and moisture with the result that the wearer going from a heated building into the cold air invites "colds" and the "itises," laryng——, tonsil——, or bronch——. On the other hand the board urges that with light or medium weight underwear this perspiration and moisture are avoided, and the substitution of heavy outer wraps meets every need.

A medical dispensary, with modern equipment, is being established for the purpose of conserving the health of the students of Michigan.

The keynote of the Conference and Exhibit at the College of the City of New York, in November, was much more optimistic than might be expected from many recent announcements with regard to the increase of insanity and imbecility in the United States. In the exhibit itself discussion of the statistics showed that the increase of insanity is more apparent than real.

Cleveland, O., is to try the interesting experiment of teaching hygienics on a praecal scale in the public schools, at the same time extending the scope and work of the school social centre, thus endeavoring to teach children how to live—"to live happily, healthily and capably" is the slogan. The extension of social centres means the renewed interest of parents and at the same time instruction of the children how to

grow mentally and physically, and the authorities intend to make the subject of hygiene purely a personal matter, teaching sanitation, both public and private; nursing, physical training, recreation, etc.

The City of New York has just cut by $1,000,000 the estimate of its Health Department's needs, though the 1913 budget is $193,000,000, nearly $12,000,000 more than the 1912 budget. In Chicago, an effort to reduce municipal expenses threatens to cripple the Health Department's work. In New York, thirty food inspectors are to be given the task of inspecting 27,000 places where food is sold, though the department asked for 200. Fifty of the most important cities in the United States spent in 1911 averages per inhabitant of 30 cents for health purposes and $1.63 for fighting fires. But there occurred in that year 117,724 preventable deaths, the economic loss from which was $200,0000,000.

"Give us this day our daily bread in a sanitary condition" is the petition implied in a bill for an ordinance which Health Commissioner Starklon, St. Louis, Mo., caused to be introduced in the city council and which he hopes will be reported favorably by the committee that has it. The bill requires bread and pies to be wrapped, all bakery products to be inclosed in sanitary containers, and conveyances and boxes to be kept in a sanitary condition.

The club women of Tacoma, Wash., have started an active campaign for pure food and market sanitation. The first ordinance has been drawn and a woman inspector secured by the women's clubs of the city. Following are the main points of the ordinance:

"Every person being in charge of a place where food is sold shall keep it in clean, sanitary condition.

"Shops must be well lighted, ventilated and free from offensive odors.

"Shelves, trays, baskets or other receptacles for food must be kept clean and free from decayed matter.

"All provisions must be raised two feet from floor unless in glass case.

"Personal cleanliness must be exacted of employees.

"No person suffering from tuberculosis or other communicable disease shall be employed where he or she will come in contact with food or foodstuffs.

"Smoking and expectorating must be prohibited, and signs to that effect exposed.

"All garbage must be covered and removed as frequently as possible.

"Shops must be closely screened during the fly season.

"Refrigerators must be kept clean and free from odor.

"Cellars must be ventilated and kept clean.

"Back premises must be kept clean."

The Mississippi Federation of Women's Clubs has purchased a number of moving picture reels on health subjects for use in the towns of the State under the auspices of the local clubs. The Federation is cooperating with the State Board of Health in its effort to improve the sanitary conditions of the State, and these reels show in a graphic way sanitary and insanitary dairies; the proper method of handling milk; how to care for the baby; the fly as an agent for the transmission of disease, and other lessons of value.

After July 1, 1913, thirst passengers on trains in Kansas will not be furnished with ice water unless the railroads supply a means of cooling the water without putting ice into the tanks. The old-fashioned ice water tank on passenger trains must go the way of the common drinking cup and the roller towel in Kansas, according to an edict issued recently by Dr. S. J. Crumbine, Secretary of the State Board of Health. Dr. Crumbine announces that he has had analysis made of the ice water on many Kansas trains during the last few months and in most cases he has found that the water is impure, owing to the method employed of putting impure or dirty ice into the tanks.

The proposed sanitary research station of the University of Michigan is assured. At their meeting the regents appropriated $2,500 towards it, and the sanitary section of the engineering department has had

donations from sanitary engineering equipping firms of materials aggregating $1,500 in values. Work on the station will be stated immediately.

Advance Notices, Alphabetical.

American Association for the Advancement of Science, Cleveland, Ohio, December 30, 1912, to January 4, 1913.

American Institute of Architects, Washington, D.C., during December, 1912.

Red Cross, American, Washington, D.C. December. Secretary, Charles L. Magee, Washington, D.C.

Road Builders' Association. Ninth annual convention, Cincinnati, December 3, 4, 5 and 6, 1912. The Secretary, 150 Nassau St., New York City.

THE EMPIRE AND THE WORLD ABROAD

Eugenics in an English School.

The teaching of eugenics, or, as the headmistress expressed it, of the facts of nature, is now included in the time tables of an up-to-date Hertfordshire, England, village school. At present the subject is not recognized in the school curriculum and is added to the scripture lesson two or three times a week.

A correspondent visitor to the school, which numbers sixty children, boys, curiously enough, outnumbering girls by four to one, was present while the eugenics lesson was given, only the top form of boys and girls between 10 and 14 being taken in the subject.

"There is nothing wicked in nature," began the headmistress to her class, and went on to talk to the eager, attentive little boys and girls about their future responsibilities in life.

"You are all going to be fathers and mothers some day," she said, "and if you don't grow up with strong, healthy bodies you will not have strong, healthy children.

"To have such bodies you must breathe fresh air, take plenty of exercise and keep clean."

Next she drew a homely simile from a fruit tree.

"You know what sort of fruit a poor half-withered tree produces, don't you?" she asked. "Well, if you are like such a tree your children will be like its fruit."

Afterwards the head mistress told why the subject of eugenics has been introduced into the school and the benefit of it.

"If you don't teach children the facts of nature in a sensible, open way, they find them out for themselves in a vulgar, improper way," she said.

"I believe in telling children those essential facts concerning life which they must know sooner or later. They ought to know. Their ignorance is not a moral safeguard, it is the reverse; in fact, sometimes our educational methods make me want to scream.

"Up till 14 a child is cared for strictly by the government—even the temperature of the schoolroom has to be regulated—but directly he is 14 he can go straight to the devil for all the government cares.

"With girls the case is far worse than with boys.

"So long as a girl keeps straight no one bothers to help her at all. Let her go off the rail, however, and rescue homes galore will take her in hand. It is like shutting the stable door after the horse has been stolen.

"I think eugenics should be taught in every school in the kingdom. If you make a child understand the blessedness of a sound body and the awfulness of an unsound one, you are doing as much, or more, as all the rescue homes put together.

"All the children over 10 in this school know the facts of nature, and there has been no instance of a child going wrong since I started to teach them.

"I have got the last thirteen girls to leave school to go into domestic service, and this is far better for girls than going on the land.

"In domestic service they generally do not marry until they are past 20, whereas if they dangle about in the fields at home they are often immature wives at 17 or 18."

Notes of Empire and World Abroad.

At the annual meeting of the Scottish Nurses's Association last month, in the Charing Cross Halls, Glasgow, Dr. G. Hamilton Robertson, secretary, submitted the committee's report. The executive regretted that, owing to the congested state

of business in Parliament they could not report any progress with the Registration Bill for nurses. The cause of registration was, however, advancing both in the British Colonies and in foreign countries, and sooner or later Great Britain and Ireland must fall into line. Sir William Macewen, who presided, said that the question had been put aside for the time being, and he was afraid that the bill could not be brought forward this year. Everything was, however, ready, and with some slight modifications he had no doubt the bill would get through whenever they had an opportunity of bringing it before Parliament. They wanted a proper standard for nursing, and they wished that to be registered, so that nobody could become a nurse by simply putting on a cap and apron.

A new medical society, established for the study of medical history, has been formed as a section of the British Royal Society of Medicine, and will hold its first meeting on the 20th inst. The membership is already over a hundred. Two special features of the society's work are to be the holding of exhibitions in connection with each of their meetings and the delivery of one or more lectures in the course of the year on some historical aspects of medicine. At the forthcoming meeting there will be a paper on epidemic diseases and an account of some early medical portraits. The exhibits will include a number of these portraits and a series of medical manuscripts. The society is believed to be the first of its kind in England, though similar societies have long been in existence in the United States, in Germany, and in France.

Dr. R. T. Leiper, the helminthologist of the London School of Tropical Medicine, has been sent to the Cameroons, there to investigate the mode of transmission of various blood worms to man, especially filariazoa. He will on his way stay at Lagos to conduct an inquiry, at the request of the Colonial Office, into the alleged occurrence of ankylostomes in the town wells. The funds for the expedition are defrayed from the Wandsworth Trust lately placed by Sir William Bennett at the disposal of the London School of Tropical Medicine for purposes of research.

The Royal Society of England has recognized the sanitary administration of the works of the Panama Canal by awarding its Buchanan medal to Col. William G. Georgas, U.S.A., chief sanitary officer of the Panama Canal zone.

At a meeting of the Medical Society of Berlin in November, Dr. Friedrich Franz Friedmann announced the discovery of a cure for all forms of tuberculosis, including tuberculosis of the lungs and bones and lupus. Six hundred and eighty-two patients, he said, had been treated with the remedy, including 250 consumptives, and the results had been so favourable that Dr. Friedmann claims practically a hundred per cent. of cures. A number of prominent physicians testified to the success of the remedy from their own experience. The nature of Dr. Friedmann's specific is withheld, but it consists of a preparation of living, non-virulent bacilli, administered by subcutaneous, intravenous injection. Over a thousand human beings have been inocculated without the least harmful results. The bacillus employed is the tuberculosis bacillus rendered innocuous.

French experimenters believe that the pneumonia microbe becomes extremely virulent in the blood of a mouse, and that if a sick person came in contact with a mouse microbe he will be gravely attacked by the disease. The physicians state that the hospitals of Paris, especially the old ones, are alive with rodents. Their conclusion is, therefore, that the pneumonia microbe exists, and in conditions calculated to increase its virulence and its power of destruction.

Advance Notices, Alphabetical.

Chambers of Commerce of the British Empire, Toronto, Ontario, in 1915

Sanitary Institute Congress at Exeter, 1913.—The Council of the Royal Sanitary Institute have issued an invitation from the City Council at Exeter to hold the next Congress and Exhibition of the Institute in Exeter from July 7 to 12, 1913.