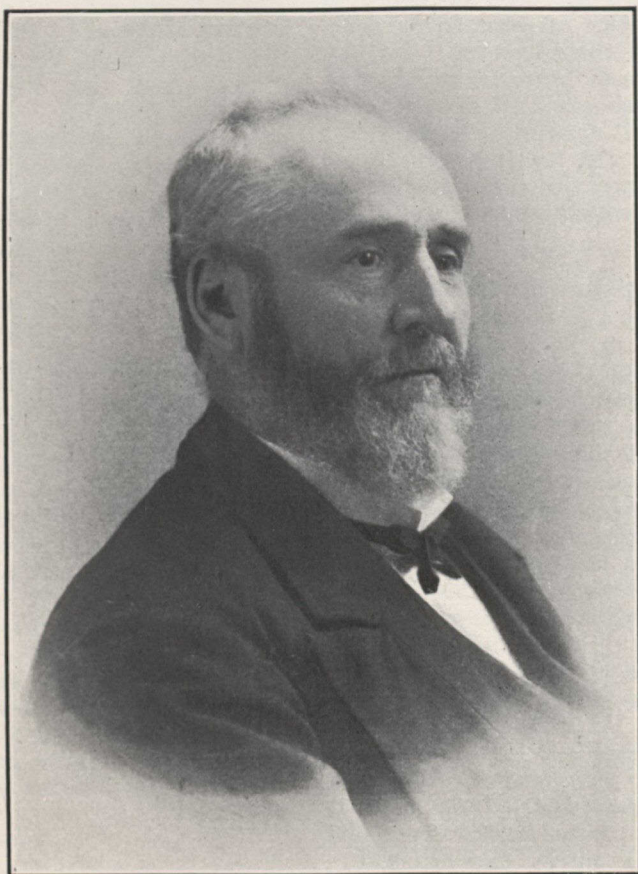


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MISSING

In the dispensary from the beginning will be established the record of your stock taking; but along with it must go your record in the county health office or the provincial offices. These cannot long resist the constant dropping of a postal card and a politician is afraid of nothing so much as the growing intelligence of his uselessness in his community and he will soon become active to such a stimulation or give place to some one more able than himself.

C. M. White, M. D.



A. P. REID, M. D.
Provincial Health Officer of Nova Scotia.

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Special Articles

THE SANITARY OFFICER, HIS DUTIES, QUALIFICATIONS AND SCOPE OF WORK ON ACTIVE SERVICE

By MAJOR LORNE DRUM, M.D., D.P.H.

PERMANENT ARMY MEDICAL CORPS

OFFICER IN CHARGE, CENTRAL MILITARY LABORATORY OF HYGIENE, HEADQUARTERS,
OTTAWA. GENERAL SECRETARY CANADIAN PUBLIC HEALTH ASSOCIATION.

An army in the field may roughly be divided into two parts: the part that is employed within the zone of active operations, marching, countermarching, bivouacing, billeting, sometimes camping, often enduring privations, and now and then fighting, and the second part, employed on the lines of communication, transporting personnel and stores, maintaining rail, road and waterways, administering cities, towns, posts and camps, and, in a word, carrying out all those manifold arrangements which are necessary to maintain in an efficient condition the fighting portion in front.

In both parts the health of the troops must be maintained, but the sanitary problems involved in each case, are so different that different systems must be employed in order to meet these conditions. For instance, the troops in the zone of operations

are for ever moving or expecting to be moved. There is no permanence about the positions or locations they occupy. Nothing of a permanent character such as one associates with municipal sanitation is applicable to them. It is true that a military unit or collection of units may reach a place on the line of march and bivouac there, expecting to be en route next morning. Instead, new orders may be received, and they will remain inactive perhaps for days and weeks before marching again. But all this time they will be in daily expectation of marching off at an hour's notice. Again, a unit may one day form part of a large force in one place, and on the next day form part of a much smaller force, or even be on detached duty elsewhere. Billets and bivouacs will be occupied as military exigencies may dictate, and not as sanitary ideas would prefer,

and the scene will be constantly shifting, amid strange, unexpected, and probably hostile surroundings. Under such conditions it may readily be understood that any system devised to maintain sanitary conditions must be based on the military unit itself and not on the area it occupies. Each unit must be trained to completely look after its sanitary needs, and undertake such rough and ready sanitary precautions as experience has proved necessary, without relying in any way on outside help.

With the troops on the lines of communication the problems presented are entirely different. Here the troops are practically stationary, quartered in cities, towns, posts and camps along the various roads, railways and waterways connecting the army in front with the base of supplies and the zone of distribution, in the rear. The problems involved now are those connected with the sanitation of areas. The system that will successfully cope with such conditions must, therefore, take on many of the functions of a municipal sanitary authority.

To meet these different conditions the following systems have been devised. For purpose of illustration, let us suppose that the part of the army in the zone of active operations consists of one Division (roughly 19,000 men). The General Officer Commanding the Division is responsible for the health of his men and the maintenance of all possible sanitary precautions. His adviser in these matters, and the one to whom he largely delegates these duties, is the Administrative Medical Officer of the Division. The A.M.O., however, besides being the sanitary, is also the medical adviser of his chief, as well as being the commanding officer of all the medical units in the Division; therefore, he is allowed a sanitary officer to help him in this phase of his work. This officer's especial duty is to oversee and coordinate the sanitation of the units composing the Division, and to keep the A. M. O. informed of the sanitary condition of the troops and suggest such steps as he may consider necessary to be taken from time to time to avoid disease. For sanitary purposes the Division may be considered made up of several independent units, whose commanders are each responsible to the general officer commanding for the sanitation of their units and the health of their

men. These units are of various sizes, consisting of battalions of infantry, regiments of cavalry, brigades of artillery, groups of engineer troops, supply columns and parks, and field ambulances. Each unit has a regimental medical officer allotted to it, who is the sanitary adviser of the commanding officer. Acting on his advice the unit commander carries out such sanitary precautions as the circumstances under which the unit is placed may call for, and which military exigencies may allow. For this work, if necessary, the commanding officer may employ all the personnel under his command, but usually one N.C.O. and 8 men per battalion (that is one man per company), or a smaller quota for small units, are considered sufficient to maintain sanitary conditions, once the field sanitary constructions necessary have been made by a fatigue party. The nature and extent of these constructions will vary with the local conditions, nature of the ground, and length of stay. The great rule that must be observed, unless prevented by tactical reasons, is that no ground surface or water supply is to be polluted; and that all places at which stops, no matter how temporary, have been made, must be left as clean on departure as before arrival. How this rule may best be carried out in each case is left to the commanding officer acting on the advice of his sanitary adviser; but the result must be satisfactory. The plan of incinerators, foul-water sinks, latrines and urinals decided upon are minor considerations, the main thing is that all organic waste material whatever must be burnt whenever possible, and if not, then buried and the burial places plainly marked with raised mounds of earth. No troops should be allowed to fall out at the mid-day or evening halting places, before latrines have been dug and the water supplies guarded. When billets are allotted no houses (except those found inhabited by cases of contagious disease) are to be rejected for sanitary reasons. In such cases, especially if the occupation extends for more than one night, it is the duty of the commanding officer or of such officer as he may delegate to carry out his duties in this connection, to see that these billets are rendered sanitary by the men occupying them.

The regimental medical officer is a sanitary adviser and has no executive duties, except such as his commanding officer may

delegate to him. He must be very tactful in carrying out his work, and while overseeing sanitary conditions and pointing out, advising, and insisting with all his might on sanitary precautions, must always remember that it would be destructive to discipline to personally order any men of the unit to do sanitary work, unless these men have been placed especially under his command for the purpose. Such a proceeding would be looked upon in the army very much in the same light as a householder would regard the action of a municipal sanitary authority who, perceiving some insanitary condition or other on the premises, would come unannounced into his house and order about his servants. The offence is equally glaring, and the feeling of resentment would be much the same. The proper course would be for the authority to deal with the householder, who alone has the right to order his servants about. In the same way, the sanitary officer must work through the unit's commanding officer, and so on down the chain.

In this way the sanitation of the troops employed in the zone of operations is maintained. Each unit is responsible for the health of its personnel and for the maintenance of the sanitary condition of the area it occupies, no matter for how short a time. Questions involving special knowledge and co-operation, such as the outbreak of epidemic disease, the occurrence of polluted food or water supplies, are referred for advice to the sanitary officer attached to the staff of the A.M.O.

In addition to the above personnel, the War Establishments of the British Army provide for a small detachment of technically trained men from the R.A.M.C., to be attached to each unit to carry out the duties connected with water purification. These detachments take charge of the unit's water carts, and are available for such other technical duties as the regimental medical officer may require to have performed. These detachments vary from 1 to 5 men, in accordance with the size of the unit. Owing to the different conditions in this country, with its scattered population and large water courses, and trusting to simplification of water purification in the future (especially when dealing with the temporary use of polluted water supplies) which the hypochlorite treatment leads us confidently to expect, similar de-

tachments have not been provided for in the War Establishments of the Canadian Militia. Instead, however, each Field Ambulance has had a sanitary section consisting of one sanitary officer, one N.C.O., and four men attached to its personnel. As there are three Field Ambulances in each Division, the A.M.O. has three of these sanitary sections at his command, which he may use when required, throughout the Division, to carry out such technical duties as the purification of water, disinfection, and sanitary inspection, or to cooperate with any unit involved in such special difficulties as the stamping out of epidemic disease.

This is, in brief, a description of the system under which the sanitation of the ever-moving troops of the army in the zone of operations is maintained. Practically everything is left to the individual units, under the general supervision and direction of the A.M.O., aided by his sanitary officer and the personnel of the three sanitary sections of the field ambulances, which he may detach for duty throughout the Division as exigencies may require.

The sanitation of the troops on the lines of communication is maintained in an entirely different way. Of course, the troops allotted to lines of communication for defence purposes, and troops marching along the roads in column of route, preserve their unit integrity and are, therefore, held amenable to the same regulations as govern the troops in front; but many of the troops passing up and down the lines have lost for the time being their unit integrity. They are simply passengers, and as such must depend upon the sanitary conveniences provided for them at the various stopping places. The same in a greater degree applies to the convoys of sick and wounded passing back towards the base. Again, at the various centres and posts are gathered large masses of men made up of details of technical troops and civilian employees with no unit organization whatever. It becomes evident, therefore, that the unit-system of sanitation can no longer apply, and that a system based on the sanitation of areas irrespective of the troops occupying them must be evolved.

Now for the purposes of administration the lines of communication are divided into administrative districts and posts, each un-

der its commander, and all under the Inspector-General of Communications. The Inspector-General has a chief medical officer called the Deputy Director of Medical Services, to advise him in sanitary matters, and this officer, like the A.M.O., has a sanitary officer allotted to him to take charge of this phase of the work. Now, just as the G. O. C. of a Division is responsible for the sanitation of all the troops in his Division, and holds the unit commanders responsible to him, so the Inspector-General of Communications is responsible for the sanitation of the troops on the lines of communication and holds the district and post commanders responsible in turn. But, instead of regimental medical officers to act as sanitary advisers to the district commanders, a new unit comes into play. This unit is the sanitary company. In the War Establishments of the Expeditionary Force of the British Army this unit is not authorized, but only portions of it, viz.: sanitary sections and squads. But in the War Establishments of the Territorial Force upon which the Canadian War Establishments are to be modelled as far as possible, this unit is laid down, and may, therefore, be described here.

The sanitary company is a highly technical unit of the Army Medical Corps. It consists of five officers and 100 N.C.O.'s and men, divisible into four sections of one officer and 25 N.C.O.'s and men, each divisible into four squads of one N.C.O. and five men. One or more of these companies are allotted to the lines of communication according to requirements, and are distributed along the lines to the various districts and posts by the Inspector-General, advised by the Deputy Director of Medical Services. To small railroad stations and stopping places on convoy routes single squads may be allotted, while to large rest camps, and large centres such as cities, sections, or even a whole company, may be detailed. They are placed, under the local commandant, in charge of the sanitary administration of the place, the manual labor being supplied by civilians engaged for the purpose. They form, as it were, the local sanitary authority, and are responsible for the maintenance of such sanitary conveniences as may be required by the passing troops, and for the sanitary policing of their areas. Their authority

and scope will of course, depend upon whether the area covered by the lines of communication lies in hostile or friendly country. If in a friendly country, local sanitary authorities continue to exercise their functions, and the military sanitary organizations only supplement the civil inasmuch as will suffice to cope with the extra work caused by the added military population. But as soon as a hostile country is entered, then the military sanitary organization takes full charge.

No special arrangement of the personnel of the sanitary company has yet been authorized, further than the division into sections and squads described, but it is presumed that the personnel of N.C.O.'s and privates must consist of men specially trained as sanitary inspectors, laboratory assistants, disinfectors, and clerks familiar with the clerical work incident to sanitary administration and the investigation of epidemics. The officers, of course, should be highly trained public health experts. A possible development may be the grouping of these various subordinates into separate groups or sections, each with its special technical equipment. For instance, the laboratory group or section might have under its charge an equipment sufficient to establish one large or several small hygiene laboratories. The other groups would be equipped according to their special duties. Such a grouping, each under an officer, would, in my opinion, facilitate the training and flexibility of the unit. For instance, the field training of the laboratory section might with advantage consist largely of packing and unpacking apparatus, moving off on short notice, and setting up its technical workshop under different conditions, as quickly as possible. A similar training would apply to the disinfecting or quarantine section; while the sanitary inspectors' section would be enabled to receive more special instruction in the work of inspection and care of water and sewage plants, and of incinerators; the inspection of abattoirs, of food and milk supplies; the testing of drains and plumbing; and the use of the various apparatus required in these duties. Of course, all the personnel should be familiar with the ordinary duties of sanitary police work, as well as trained in the making and management of all field

sanitary constructions, and the provision of pure water.

A sanitary company organized, equipped and trained along the above lines, would, in my opinion, be capable of taking over the care of a large city or centre, or of distributing its personnel in suitable detachments along the lines of communication covering several contiguous areas. But, however the sanitary company may ultimately be organized in future establishments, whether into specially trained sections as above outlined, or simply generally trained as sanitary inspectors and in water duties, it still will be the responsible executive factor in the maintenance of the sanitation of the areas covered by the lines of communication.

Another new factor of great importance which may be taken up at this point is the Sanitary Inspection Committee which was authorized some three years ago. This committee is to be formed on the mobilization of the troops, and will consist of a combatant officer as president, and a field officer of engineers, and one of the medical corps, as members. The duties of the committee are laid down in detail in "Field Service Regulations, Part II," and may be described as mainly advisory. They receive their orders from the Commander-in-Chief through the Director of Medical Services. They visit and inspect stations occupied by troops, and by their advice and authority co-ordinate the work not only of the different military branches, but also of the military and civil organizations of the areas occupied in the interests of sanitation. They form a board of reference for the solution of sanitary problems, and initiate such important schemes of general sanitation as may be required. Although concerned with the health of the army as a whole, their sphere of action will necessarily be limited, as a rule, to the areas covered by the lines of communication.

These are the two systems which have been evolved for the maintenance of the health of the troops of the whole army. Different personnels and different training and qualifications are required for each. As may be seen, the manual work of sanitation with the troops in the zone of active operations is performed by the soldiers themselves under the direction of their own officers and non-commissioned

officers. The regimental medical officers are only advisory, unless otherwise empowered by their commanding officers. But on the lines of communication the manual work is carried out chiefly by civilian employees under the direction of the personnel of the Army Medical Corps organized into companies, sections or squads as the case may be.

At the front with the marching troops little or no higher technical work can be carried out, and laboratories, like operating-rooms, are left behind on the lines of communication. The regimental medical officer must have a good working knowledge of hygiene and field sanitation, but he is not required to have the knowledge of a specialist. The combatant regimental officer must also have a fair working knowledge of the sanitary care of troops and of field sanitation, as he is the executive officer responsible for the work required. On the lines of communication the conditions are changed. Areas are occupied more or less permanently. Hygiene laboratories are established where higher technical work can be done. More permanent sanitary constructions may be erected, and large and costly installations planned. Large civil centres, with their heterogeneous population and existing sanitary organizations, institutions, and plants may have to be taken over and administered, and civil and military resources co-ordinated. All these duties call for special training along the lines of higher technical and municipal health work. Therefore, the qualifications required of sanitary officers vary with the duties they are called upon to perform.

Before going into the qualifications required for sanitary officers of the Canadian Militia, I will briefly outline the qualifications required of such officers in the British Army and Territorial Force. Every officer of the R.A.M.C. on joining receives a course of two months' duration in the hygiene laboratories of the Royal Army Medical College at Millbank, London, followed by a course in field sanitation at the Army School of Sanitation, Aldershot. The laboratory course is repeated with some additions before an officer takes his promotion examinations for the rank of Major. This training, with the usual field experience obtained at the autumn manœuvres, fits an officer to fulfil the sanitary

duties of a regimental medical officer and to instruct the combatant officers of the unit to which he is attached in field sanitary work. For the positions of specialist sanitary officers to A.M.O.'s and of officers in charge of sanitary sections, further qualifications are needed. For this purpose, when an officer returns to the R. A. M. College for his six months of instruction before taking his examination for promotion to the rank of Major, he may select as his special subject, hygiene, and is given four months of laboratory instruction in addition to the two months' obligatory course. Should he pass this examination, he is given a certificate of specialist sanitary officer, and becomes qualified for the higher positions. Many officers in addition to gaining this certificate take the diploma of public health of one of the British examining bodies.

Besides the above sanitary training and examinations, special classes are held at the Army School of Sanitation at Aldershot, at which combatant officers, N.C.O.'s and men are trained in personal hygiene and field sanitation. These classes train N.C.O.'s and men to perform the duties of the regimental sanitary squads. Similar classes, but with more advanced instruction, are held for N.C.O.'s and privates of the R.A.M.C. to qualify them to act as personnel of the sanitary sections on lines of communication, and of water duties squads attached to combatant units. Classes are also held at various headquarters during the winter season at which combatant officers receive instruction to enable them to pass the examination in sanitation which they must all take before promotion to the rank of Captain. Finally, all combatant officers must lecture to their men in elementary sanitation and hygiene.

In the Territorial Force much dependence is placed for special sanitary knowledge on the municipal health officers of the country, as most of these are in possession of diplomas of public health and are trained laboratory workers. The officers for the sanitary companies and for other specialist appointments will be largely recruited from their ranks.

In the Canadian Militia army sanitation in accordance with modern ideas is a matter of recent growth, and organization

along the lines of the British model is as yet incomplete.

Most of the training hitherto has been done at the annual camps of training, and consists of the training of regimental medical officers in the routine work of camp sanitation, under the supervision of the A.M.O. During the last few years a steady improvement has been apparent along these lines. A distinct advance was made when officers of the P.A.M.C. were detailed four years ago to some of the larger camps to act as sanitary officers to the A.M.O.'s. These permanent officers, with their special training, introduced a higher standard of field sanitation and took over the sanitary instruction of the regimental medical officers. They also trained those officers who showed special inclination and aptitude in the more extended work of field sanitary administration. Some of these officers are now available for duty as camp sanitary officers, and with the officers in charge of the sanitary sections attached to field ambulances, mark the rise of the specialist sanitary officer in our militia.

Along with these improvements, an examination in field sanitation was added to the examinations which must be taken by all militia medical officers before promotion to the rank of Major. Similarly, an examination in army sanitary administration is now held before promotion to the rank of Lieutenant-Colonel.

So far all the instruction given in these subjects has been of the nature of lectures by the A.M.O.'s and their sanitary officers, and of practical work in the annual camps. In future, however, special classes will be held at the various military centres during the winter, when instruction in this subject will be given to provisionally appointed lieutenants and to captains prior to the examination for promotion to the rank of major. For the training of specialist sanitary officers for the militia a new departure is now under way. Classes will in future be formed during the winter at the Central Military Laboratory of Hygiene at Ottawa, where a few officers at a time will be trained in the work of water and food analysis and the principles of field sanitation. Classes will also be formed at this laboratory for the instruction of field medical officers in army sanitary administration before taking the promotion

examinations for the rank of Lieutenant-Colonel.

It is hoped that many officers will avail themselves of the opportunity of taking these classes, so as to fit themselves to perform the duties of camp sanitary officers and of officers in charge of the sanitary sections of field ambulances. These are, as yet, the only sanitary positions in the militia calling for specialist sanitary knowledge; but, doubtless, in time, as the units peculiar to the lines of communication are authorized, sanitary companies will be organized, and these will call for a further supply of such officers. The duration of the classes and the extent of instruction will depend upon the time which each officer can afford to expend, as it is not considered advisable at present to make any hard and fast rules, nor to exact any special qualifications. But it is hoped that all officers of the A.M.C. who have special civil experience, such as medical health officers, will interest themselves in this new development of our service and by applying for a course at the Central Military Laboratory learn to apply their special civil knowledge to military requirements, and so become available for vacancies as they occur.

Nothing has so far been said about the training and qualifications of the officers of the Permanent Army Medical Corps, as this corps would, like the other branches of the Permanent Force, cease to exist as a separate corps on mobilization and become merged in the Active Militia. It is sufficient to say that the qualifications exacted of the officers of the P.A.M.C. are similar to those required for the officers of the

R.A.M.C. All must follow a laboratory course in hygiene, while ample opportunities of acquiring experience in field sanitation is afforded by the routine work at the annual camps of training of the active militia throughout the country, and at the summer training camps of the Permanent Force at Petawawa and McNab's Island, Halifax.

The laboratory course up to the present has been carried out at the Hygiene Laboratories of McGill University, Montreal, under the instruction of Prof. T. A. Starkey, M.D., D.P.H. (London).

In future, however, this course will be given at the Central Military Laboratory of Hygiene. Officers showing special aptitude in this work are detailed, as the exigencies of the service allow, to take the course leading to the diploma of Public Health at McGill University, and so become qualified as specialist sanitary officers, in accordance with the standard laid down for similar officers in the British Army.

The above training qualifies the officers of the P. A. M. C. to fulfil their role of instructors to their confreres of the active militia. But it is not, of course, contemplated that the qualifications exacted of the militia officers shall be of so high a standard. Dependence will have to be placed in a great measure, as in the Territorial Force, upon the civil experience of the A.M.C. officers appointed to the higher sanitary positions, supplemented by such training as has been outlined above, in camp, and at the Central Military Laboratory of Hygiene at Ottawa.

SANATORIAL TREATMENT OF TUBERCULOSIS

By A. P. REID, M.D., Provincial Health Officer for Nova Scotia.

Let us analyze the subject and find just where we stand—it is generally conceded that tuberculosis is not only curable, if taken in time, but easily handled, as 90 per cent. of those who die from all other causes have had this disease, got well of it, and never knew they had it.

Hence the swollen death rate of tuberculosis must come from the 10 per cent.

of afflicted who from varied causes have drifted beyond the 90 per cent. line, and our object should be to secure them before reaching this line—to get them in the very early stage, before they get sick, before inroad is made on the constitution, before they are likely to consult a medical man—for at this stage they may have crossed the danger line.

That this is quite practicable this paper is designed to demonstrate, and it will show, if honestly and diligently followed, that no one should cross the 90 per cent. line. The extinction of tuberculosis in the near future is more than a possibility, and this can be obtained at no cost for medicine — sickness, nursing, hospital care — nor loss of time from productive labor. We must keep all the afflicted within the 90 per cent. line.

This will take money, brains and assiduous attention to duty on the part of health officials in contending with the many and varied conditions by which the hapless 10 per cent. have been forced to succumb—for they furnish one-seventh of all deaths from all causes—with all the expense, pain and misery that this implies.

So varied are the local conditions that the means employed must be elastic. The one principle must be kept in view in every case—so arrange that the 10 per cent. do not pass the 90 per cent. line, by furnishing them at a sufficiently early date with anything that may be needed in the way of medicine, care, etc., while at the same time the great majority can still be employed at their usual productive labor, live in their own houses, support their families, and carry on their business and get well (to use a bull) without getting sick.

The above statements, without detailed consideration, look not unlike a fanciful conception, but we shall get down to the hard facts by analyzing some of the conditions that present themselves for consideration:

1. There are in the earlier stages no definite symptoms that would warn the patient of his condition and make him or her resort to aid at the period when this can be most effectively given; and this explains why the afflicted cross the danger line. The tubercle bacillus bores its way through the tissues and lungs and not unfrequently does irreparable damage before causing alarm. Tuberculosis is a sneaking, insidious malady.

2. Difficulty of early diagnosis; for ill health with more or less debility, with or without cough, are common symptoms of many diseases, and as it is human to hope for the best, delay is to be expected, so that the time when cure is certain is allowed to

drift by without making efficient, or, in fact, any effort.

3. The afflicted are the producing class in the prime of age (and they should be in the prime of health), the bread winners and home makers, and as the necessities of the day demand their attention, ill-health, unless of extra severe type, does not intrude on the patient's everyday work.

4. When arrived at the stage interfering with labor, the doctor is consulted and the dread intelligence is conveyed. Then a host of obstacles present themselves, which vary with the individual: (Let us assume there is sanitorial accommodation.)

(a) The want of means to pay for care, and meanwhile the support of family or dependents, or carrying on of business.

(b) If assistance be available, there is objection to the "forma pauperis," as a rule the consumptives do not belong to the mendicant or non-producing classes.

(c) Too often it is crowded hospitals and sanatoria and no room.

5. The patient may know his workshop or office is unhealthy, or his domicile defective, but be powerless to correct it, as he must "hold down his job and grin and bear it," as complaint might mean dismissal, with all that that implies—or his means will not afford a desirable residence, or he is in debt to his landlord. Were there competent Government health inspection this could be eliminated, for the inspector, being independent of employer or landlord, would be in a position to insist on sanitary conditions.

6. When the patient leaves his home for the sanitarium he leaves behind him the seeds of disease in the house, or mayhap in some of the inmates.

7. The recovered patient still needs watchful care in case of recrudescence, that he cannot see nor feel.

8. Tuberculosis is a house disease; here the bacillus harbors in the building or its inmates, or both, too often favored by unsanitary conditions which prepare the way for its propagation, when a tubercle carrier (a visitor perhaps) distributes the germs.

It will be noted in the foregoing that only the salient points against which we must contend have been referred to, but they suffice to include the rest.

To contend with this disease the sanitarium has been introduced as a prime factor in the contest. That it is not only a

very great convenience and, as well, a most valuable aid to those in a position to utilize it, there can be no question, but to the vast majority requiring aid it must be a "terra incognita."

When that model scientist, the late Dr. Koch, discovered the tubercle bacillus, and the late much maligned Dr. Brehmer demonstrated the uselessness of medicine as a curative agent, and at the same time the success of hygienic measures, our ideas on tuberculosis underwent a complete revolution.

The comparative success that was associated with sanatorial treatment captured the laity as well as the profession, and in common with others, I assumed that the sanatorium could be made the grave of the tubercle bacillus.

Experience, however, has disclosed inherent defects in its present method of installation which militate against its success.

Since the establishment of sanatoria the tuberculosis death rate has diminished, no doubt partly due to them, but also to the great awakening of the general public to the advantages of fresh air, diet, rest, appropriate exercise and other hygienic aids which will cure the incipient and even the cases not too far advanced. All of these conditions have no doubt had their influence in promoting the falling death rate.

In dealing, however, with the sanatorium let us consider the disabilities under which these institutions labor, many of which are not remediable and must lead to their failure to accomplish what it is assumed they can encompass. Put it in other words—their role is very limited as regards the extinction of the disease or the cure of a very large percentage of the afflicted (explained *infra*) even were the cost not considered.

The disabilities are:

1. A sanatorium is expensive to construct (as now in vogue) and its administration also costly.

2. For one who can be accommodated, hundreds need aid. An expert on this subject estimated that there are not less than 5,000 or 6,000 seriously affected in Nova Scotia, and the majority of them either at present, or in the near future, require aid; and to furnish this on the sanatorial plan of treatment needs but mention to disclose its impracticability.

3. It is not easy to get the cost per pa-

tient below \$10 per week, which, added to the interest on the cost of the building, means a charge of say from \$15 to \$20 per week that must be paid by the individual or by the community.

4. A patient cannot assist in his own support unless in the form of a cash contribution. This is an impossibility with the vast majority who might contribute in kind were facilities furnished.

5. Incipient cases are but rarely bedridden and would be better in every way if engaged in the support of self or dependents, or in useful or wage-earning employment, and it is quite apparent that the facilities for this can never be a feature of sanatorial life.

6. Institutional treatment is not necessary, for 90 per cent. of the afflicted get well without knowing it or making any special effort, while at the same time engaged in their usual avocations. The remaining 10 per cent. could recover in the same way at their own homes and usual employment if common sense and scientific treatment were adopted in time, while in their own homes, before their sickness was such as to require them to leave off their employment. This is exemplified by the Dr. Phillips' dispensary system in Edinburgh, and Dr. Dixon's method in Pennsylvania; the lines they use must be followed to secure success.

7. By adopting this preventative treatment there would in a short time be no advanced cases to require treatment in hospital or otherwise, because those now existing would either have recovered or passed "ad majores iis" and tubercle carries being reduced to a minimum, ere many years tuberculosis would be locally extinct unless reintroduced.

8. The strongest argument against the sanatorium on lines now in vogue is that it contemplates a permanent fixture in our social economy — the removal of diseased persons for cure (at no small expense) while leaving behind in the house from which the patient emerged a tainted domicile with more than probably tainted inmates to furnish a future supply for the sanatorium. Unless a radical change in principle be adopted the disease would continue to be reproduced at the numerous foci scattered over the country, and there is no probable end to this programme.

Read between the lines, there is material

for a volume on this subject—we need not pursue it further.

What is the solution of the question?

There are two classes to be considered: the residents in towns and those in country districts. It is to the latter I will now specially refer, the others to be taken up later.

We must make every residence a sanatorium and every factory, office or workshop must be conducted on sanitary lines, and this is not only feasible, but the expense may be comparatively trivial. Have it so arranged that fresh air shall enter every house, night as well as day, winter as well as summer, all the time. The drainage, as well as ventilation, needs close attention; the cleanliness of the house from dust and filth accumulation must be insisted on, and nutritious and good food must be available, and there you have it.

The air costs nothing and every house can now be (so-called) cleaned, and this should not entail much extra expense; and nutritious diet is or should be the rule. A sanatorium, no matter what its cost, can not furnish more towards the patient's care and cure. These three requirements being furnished, the house construction is purely a matter of convenience; it may be the canvas tent, log shack, or stately mansion, with the greatest difficulties to be solved in the construction of the mansion.

So little being needed, why are things as they are? The answer is easily given—carelessness, ignorance and prejudice.

The question thus resolves itself into the best means to dispel carelessness, ignorance and prejudice. We have the schoolhouse for the rising generation, the church, with its facilities for instruction in this as well as its ordinary work; instructive literature that should be in every one's hands; special lectures and demonstrations at all centres where people congregate, and the press in all its branches.

Theoretically, these should be enough to achieve results. We have them all now more or less in evidence, but practically we are as we are, because the school has more to do now than it can handle, the church is in much the same position, literature cannot get in its work, for the masses are not interested in science nor in that which is not exciting or demonstrative nor possessing the fascinations of the dime novel; special lectures and demonstrations have not the magic about them that poli-

tics or religion has to congregate and sway the masses.

Aside from all this, we must recognize the fact that the bread winner and home maker are the persons we specially wish to interview, and they are apt to be too tired after the day's work or too interested in some necessary duty to desire to leave their house; and so they give the go by to the lectures and demonstrations. The press appears to regard the matter from an academic point of view. Could not every newspaper and magazine have a short advertisement in prominent type on its front page, continually, such as "Fresh air, freedom from filth, pure food, mean health and life." Its continuous presence would gradually permeate the unthinking masses.

Are there no ways to overcome such hindrances? There are, but we must utilize some of the peculiarities of human nature. Foremost and most necessary of all, we must make a direct individual appeal, adopt the role of the commercial salesman who is successful through the influence of personal contact.

In this way he eliminates carelessness, educates ignorance, and satisfies prejudice. We can listen with interest or equanimity at disclosures relating to our neighbours, and readily concede that the fault lies with the other fellow, but if we are directly cornered and our defects pointed out things present a very different aspect.

Hence to summarize:

We must have capable persons as interviewers.

A capable Health Inspector (male or female) must visit personally every house—directly point out defects and advise the remedial measure to be taken, and finally see that it is done. If the person has not the means to follow the advice, the inspector should be in a position to supplement.

While examining surroundings, he or she would note the conditions as to health, if there be visible contagious disease, or any of the residents be weakly or in failing health, or has a cough, or weakly from any cause, as old age, defective nourishment, etc. All these should be reported to the Medical Health Officer of the district. Owing to circumstances these visits would need to be repeated to insure that sanitary requirements be complied with, and the instructions of the Health Officer be carried out.

The monthly report to the Health Officer (or oftener if required) would comprise the duties devolving upon the Inspector.

By the exercise of common sense, kindness of manner and tact, the visits would be appreciated; for it would readily be seen that the good of the household was the only thing considered.

In this way carelessness would be jolted out of its self-satisfying rut, ignorance dispelled, and prejudice eliminated. Let the Inspector adopt the tactics of the mercantile canvasser and success is certain, as there is no demand for money, no tax, no bonus for the adviser, and only the benefit of the persons visited considered, and, if required, aided.

A Medical Health Officer would be required for every district who would report to the Government direct or to a local Health Board, if so designed.

It would be his duty to receive and verify the report of the Inspectors and be guided accordingly. He would be responsible for the proper performance of their duties and have their appointment or dismissal.

The question of diagnosis would be of secondary moment, his medical knowledge would point out the means to be adopted to correct insanitary conditions or revive failing health, for the hygienic methods that cure tuberculosis are equally required in any case of disease. He at once could decide if segregation or quarantine be required, or if surgical or special medical aid be needed and advise accordingly, and if his instructions be not carried out report to the Department of Health. He need not personally take care of the patients, as they may have their preferred medical adviser, but he would see that proper care was given, and in case of inability on the part of the patient, he would be in a position to supplement any deficiency.

He should report quarterly or oftener to the Health Department, and here unless otherwise instructed, his duties are ended.

In this way tuberculosis or any other disease would be prevented at its inception. Every house would be, as it should, a sanatorium, and all the expense would lie in supplementing what would be needed and supervising details not necessarily expensive.

The home-maker and bread-winner need not quit their occupations, unless in severe illness, and the sick or weakly might get well before serious indisposition incapacitates them.

It may be assumed that the visits above outlined would be received with suspicion, coolness or objection as an unwarranted intrusion on the privacy of the home, but the experience of Edinburgh, New York, Chicago and Pennsylvania, as well as that of the Anti-Tuberculosis League of Halifax, wherever the lines of the dispensary system have been followed, would negative any such conclusion. The Inspectors' visits are looked on as a boon, as they come to advise and to aid, use no threats nor force of any kind, and are solely actuated by the desire to benefit those who are in need of advice or assistance. Hence objection or indifference is most unlikely to present itself, as the sick are more than anxious to adopt any means in their power for the alleviation of their ailments once they are aware of what is required, and will accept the ministrations of the Inspector in the spirit in which it is given.

Thus in a threatened forest fire, to resort to simile, we might convey all the burning embers to a place where they could be harmlessly burnt out or quenched. This is the principle the sanatorium now acts on — or we might quench every small fire before it reached large proportions, and watch each closely to prevent smouldering embers from again lighting up. This is the principle we propose should be adopted, and where circumstances would be improved by the sanatorium principle, let it be utilized.

The preferable plan is self-evident in tuberculosis; removing the patient leaves embers behind that portend future trouble. These exist in the house (which can with difficulty be properly disinfected), or too often in a latent or incipient form in its inmates, and in no way can the sanatorium method overcome these difficulties.

The proposed plan would keep tab on every house and inmate and, while preventing serious outbreak, would restore the afflicted to health at a minimum of expense and inconvenience.

In the sanatorium there is a cost of \$10 to \$20 a week (borne by some one) per patient. By caring for him at his own home, this sum (outside of the cost of

supervision) would relieve a vastly greater number, as the patient can aid in his own support. At the same time we are getting every case in its incipient or curable form and so keeping them within the 90 per cent. line, above referred to. Also in other ways the patients would be benefited, they could assist directly in their own cure, keep up their employment and income, live in and care for their own homes and dependents, and get the exercise and interest in their own welfare that has so much to do with recovery.

Recurring to the disabilities of the sanatorium (*supra*), we can here greatly eliminate them—the cost of construction and operation, the accommodation for the many requiring aid—the cost per patient weekly not only being much less but nearly, if not wholly, furnished in kind; while with notification and diagnosis now practically unattainable, the certainty of capturing incipient cases in time, and, as a finale, the gradual extinction of the disease would be advanced.

Let us shortly direct attention to the vastness of this subject.

The victims of this disease are those in the prime of life, at the most productive period of their career. They are the brain and brawn of the country, the *vis viva* of all our active industries, be they educational, professional, mechanical or productive as in agriculture, the fisheries, the mines, or the intelligence and energy of our business men.

Our statistics inform us of 1,000 deaths in the year from this cause alone, not incapacitated for a time, but absolutely rubbed out (and this every year) among our brightest and best in every walk of life.

The thought is appalling and more than regrettable, almost criminal, because avoidable. In addition, we have loss of time and expense of sickness of some 5,000 or 6,000, not fatal, but slowly moving in that direction, to furnish the yearly quota of 1,000, and to all this added nervous strain, pain and worry, and this without present prospect of an end.

This is all due to an infinitesimal entity, microbes that we cannot see except by the expert microscopic eye.

Were they legions of soldiers or armed armadas our last man and last dollar would be available to stay their progress, and yet all the soldiers and armadas of all time

have not caused one per cent. of the destruction of human life, expense, pain and worry that this infinitesimal entity has continuously caused from the earliest dates of history, and so it will continue to do unless our lines of attacking it are made more direct.

Before we knew what it was or its vital properties we were fighting in the dark with little or no success; now we know enough about it to control it, if we will, but it will cost money, enthusiasm and energy.

The criminal and insane are provided for, the tramps and "hoboes" look after themselves. The latter's principal danger is crushing by the railway cars while negotiating free excursion trips. I never heard of one suffering from tuberculosis. Their open air life protects them, and they rarely have other disease except by accident or infection. If the dietary be irregular, and as it is not apt to be too stimulating, it in so far corresponds with his exertions, which are similar in type. "Nolens volens" he carries out these fundamental laws of health: fresh air, food in proportion to exercise and sparing in character.

In towns and cities conditions vary, and the place must be modified accordingly, owing to density and number of population and their methods of work and living.

The sanatorium or its equivalent would be a most necessary adjunct to care for the advanced cases that now receive but scant attention, and as well to look after those whose domiciles can not be utilized for the home treatment.

The experience of the Phillips' dispensary system in Edinburgh, and that of Dr. Dixon, State Medical Health Officer of Pennsylvania, show how much, even in large cities, can be accomplished by a systematic and scientific treatment of the poorer classes of the population at their own homes. The Anti-Tuberculosis League in Halifax, working on similar lines, have similar results, though badly hampered by want of funds. A few private individuals are trying to do the work that the community as a whole should do.

This subject is too large for proper treatment in a short paper, and here, and now, it would be too cumbersome to elaborate. Sanatoria in the vicinity of towns and cities are necessary, but they should be of cheap construction so as in a few years to

be disinfected by cremation—the tubercle bacillus is a lurker in dust and corners, and no home can be built without some hiding places that careful disinfection is not always able to cover, and cremation is the most reliable disinfectant.

How can we secure these practical details? We can get all the elements necessary except the finances, and there can be no question but these will be available as soon as the people and their voice — the Government — have resolved to obtain them. Schools, colleges and roads we could live without, as our forefathers did, but when the people wanted them, their executive, the Government showed wonderful energy and success in carrying out the popular wish.

If disease breaks out in the sheep, cattle, equine or swine population, funds and the intervention of the Government are available for its suppression. There is no error in this, but the same methods should go farther, and include the human population.

Where mankind is the subject (unless exceptionally) the expense and management are delegated to the municipal authorities, who are hampered by limited means as well as the desire for economy. We have a code of laws (good as far as they go) that are quietly ignored, partly through indifference, partly through ignorance, and partly because they may touch on the interest of influential parties. The finances required to carry out the Public Health Act must be furnished by the locality through its council, and the chief object of the councils (as is to be expected) is to cut down the taxation; and public health for want of influential friends too often must step aside. A new street, road, sewer or public utility, gets aid more or less; these have active friends to see them through, and (perhaps in modified form) through they go. Imagine not for a moment that I imply graft or questionable expenditure, for as a rule I think this is rare, and the councils act up to their light — the strongest and loudest-mouthed applicant gets ahead, and public health, having only the low, small voice of the statute book, with no one to call forth its strength, must take what may fall to it.

There is no efficient system of management always and at once available, and

but limited knowledge of the best means of procedure.

We must have in the control and management of the Health Department the Government, with its financial and legislative strength and influence, with efficient local Health Boards appointed by the Government and under its sole control. Those we now have (appointed by the municipal councils or the town council) are, as a rule, perfunctory, and their object, to steer clear of public health or put it out of the way as much as possible. The history of small-pox is an illuminating example. In Germany the Government took the matter in hand and it was soon eliminated. All over America and in many other countries it has a foothold, and so will it continue to hold its own along present lines of mismanagement.

Assuming that the Government takes the matter in hand, let us estimate what the cost would be to carry out the system proposed in Nova Scotia.

This can only be an approximation, but we can approach it closely. We have two cities, 33 towns, and 18 counties. Leaving out the two cities, that now have their special laws, let us assume that the Health Officers of the towns receive annually \$500, and in the counties \$1,000 (owing to larger area), and that Inspectors receive \$400 in the towns and \$500 in the counties — these sums in allotment would be modified by the area and population of the districts, but we may assume these charges to approximate the expense.

Health officers, \$1,000 each per year	
for 19 counties	\$18,000
Health officers, \$500 each per year	
for 33 towns	16,500
Health inspectors, \$500 each per year	
for 18 counties	9,000
Health inspectors, \$400 each per year	
for 33 towns	13,200

Annual official expense \$56,700

The cost of vaccination, disinfection, medical and other relief for the poor of municipalities and towns are now provided for by statute, but had better come under the one management.

To give a margin for probabilities, let an appropriation of \$100,000 be made in the interest of public health, even if other appropriations were lowered pro rata to make this amount available.

The Government, which has supreme authority, could take up the management of public health funds and institute and enforce a general and precise system throughout the Province. New legislation would be needed to define details which are now more general than specific.

I do not think it can be justly contended that the outline given here is beyond our powers of attainment, and this the more as the cost would diminish as sickness and the loss of productive labor would diminish, with the result that the people, being better off, could easier support the expense.

Looked at from a purely utilitarian point of view, it would place or leave millions of dollars annually in the pockets of our people, while abolishing much of the suffering, worry and expense, and the not infrequent cases of insanity and suicide that follow in the tracks of preventible diseases.

The plan above given is best calculated to obtain the desired result, but it may be modified by requiring contributions from each town and county, provided that the control thereof be removed from municipal authority, for, as a rule, it has been a failure, and as the causes producing this are, and will continue, in evidence, there are but little hopes of any improvement in the work as carried out on present lines.

The criticism may present itself that my contentions lean towards Socialism. They do, but not to that type that assumes a common treasury to which everyone contributes his work and energy, and has the right of support all the time, as well as in time of sickness, accident or old age — a beautiful dream, but it must fail owing to the frailties of human nature. We are nearly all inclined to follow the path of least resistance; in other words: "Do as little as we can, and get as much as we can for it."

Another type of Socialism is society, so called, that is selective and swings on the question of who's who.

In fact, the types of Socialism are as varied as there are common lines of work or pleasure.

The Socialism I contend for is the one indicated in the Holy Scriptures: "The poor ye have always with you," and they should receive Christian care as well as recognition; care in sickness, accident or poverty of those who fall by the wayside, tersely indicated by the expression "Luck has gone against them"—the kind of Socialism now being tentatively introduced by many countries, notably Germany and England, now being more elaborately outlined by that advanced statesman, Mr. Lloyd-George, and as well, favorably considered by our own Dominion and Local Governments — savings banks, annuities, old age pensions, etc., are all points in the same line.

The principle I contend for is that every person, not a criminal, who to the best of his ability fulfils a useful role in life, has made society a debtor to this extent: that where incapacitated by sickness, accident or age, he or she is entitled to the necessities of life and the best care that circumstances warrant, and that it is not a dole but a debt which is payable when the occasion therefor supervenes.

This is the broad foundation of Christianity as laid down by the Saviour, and will endure while our race lasts.

At present I am only contending for a development of one branch of this humanitarian policy, adequate care of the tuberculous, not only in their interest and that of their families, but fully as much in the interest of the body politic.

We devote large sums for immigration, commendable in itself, but we often get an omnium gatherum of limited value. Why not devote the needed sum for conservation of our resources, the most valuable of which is the saving of the lives of thousands of our people yearly, the life of the country and its choicest inhabitants.

In the pithy words of our late most revered King Edward VII., "If preventable, why not prevent?" and we may also say, if curable, why not cure?

We can do it if we will. Will we?

POVERTY AND SCHOOL CLINICS

By L. HADEN GUEST, M.D., D.P.H.

SCHOOL MEDICAL OFFICER, LONDON (ENGLAND) COUNTY COUNCIL

The division of children into those who are average, those who show defects, and those who show defects plus poverty, becomes at once important as soon as we attack the problem of treatment. The average children in Council Schools (who are, nevertheless, below the standard of their own possibilities), and the children with defects, may be put aside for the moment; the children with defects plus poverty are an urgent problem demanding instant attention.

Children belonging to the poverty group, as already defined, are the children sprung from the morass of destitution foundations of our civilization. These children come from definitely localised neighborhoods, from particular streets and from special blocks of "model" dwellings. The poverty of destitution and demoralization is spotted over the surface of our towns as concretely as smallpox is spotted over the face of a man sick from this disease. The poverty spots are, however, pits sunk into the face of our cities, mouths of the abyss into which human life and our civilization sink away out of sight of man. And to children coming from the poverty spots, it is no use throwing a box of ointment or a bottle of lotion to cure their diseases, these things make no impression thrown into the abyss.

A mother equipped with patience, the desire of cleanliness, and the wish for health, may get some good out of a hospital out-patient department, even if the interview, accorded by the doctor, after hours of waiting, be very brief. The mother, from the demoralized poverty spot, even if she arrives at the hospital, will get usually no help useful to her.

The doctor's point of view needs to be considered. A busy man seeing very many poor patients and giving, frequently the same instructions, and meeting constantly with the same failure to get those instructions adequately carried out, may sometimes get a little hopeless as to the value of his out-patient work.

The advent of a typical slum (poverty spot) mother increases the doctor's feeling of hopelessness ten or twenty-fold. Take a concrete case, that of a child with discharge from the ears. The mother of the case I have in mind is a person with tattered, frowsy, and safety-pinned raiment, conforming generally to the blouse and skirt type, the sleeves are torn to a conveniently free length, the waist is commodiously ample. Neither face nor hands are especially clean, the face is coarse in feature and grinningly amiable. Conversation reveals much surface plausibility, with much genuine and deep-laid inertia. The home is in two or three dark, semi-basement rooms, low, hung with lines on which hang flapping clothes, cumbered with backless chairs, decayed tables, peeling veneer chests of drawers, and iron bedsteads heaped with brownish coverings.

It is wonderful that, faced by the problem of treating the child of such a mother, living in such a home, the doctor may get a little despairing? Treatment which consists partly of syringing out the ears must inevitably fail of being carried out under cleanly conditions (aseptic is pure utopianism). Regularity is not understood, any directions given, except with the most labored simplicity, are not understood. For unexplained reasons such a patient will frequently not attend to see the doctor and report progress. For other unexplained reasons the patient will try "a bottle of medicine" from some private dispensary or from some other public institution. On other occasions the patient will attend in charge of an incompetent person to whom it is useless to give instructions and from whom it is impossible to expect reasonable information. In the particular case the person in charge was often a drunken (sometimes drunk) grandmother, and once or twice a sister a year or two older.

In such cases it may be possible to get parental consent to an operation for re-

removal of tonsils or adenoids. That involves very little trouble to the parents, and is besides by way of being fashionable, and has proved of benefit to neighboring children. But an operation is the first part of the treatment, not the end of the treatment. A child operated upon needs medical supervision and careful training before it may be pronounced cured. And this supervision and training it does not get.

The case cited above is by no means an especially bad case; it may even be thought to belong to the aristocracy of the poverty group. The case is still possible to treat by the united effort of school nurse, school teachers, school doctor, dispensary doctor, with the casual intervention of the clergyman, the district visitor, and a member of the Children's Care Committee. But there are many cases beyond these agencies. There is (I take examples at random as they occur to me from my own experience) the case of the blind woman, a widow, with verminous and ringworm-smitten children. Medical treatment comes and goes, according to the aberrations of the patient, but the conditions persist. To expostulate with such a mother for sewing her child's clothing tightly upon its back is to get a glib explanation (glaringly denied by obvious conditions) that this is done regularly after the equally regular bath. Nevertheless, however glaringly obvious the condition, the cure is not obvious under existing circumstances. To give a complete outfit of clean clothes is no remedy, it has been tried more than once and failed.

Another case is that of a child attending a school for mental defectives. The school nurse noticed the discharging ears, and managed, after considerable trouble with minor arrangements, to get the child specially medically examined. At the examination the mother stated that the child was "under treatment." This, it appeared, meant one attendance in six weeks at a hospital out-patient department, where she was given some lotion and some rapid and half-comprehended instructions. The mother then consented for a special arrangement to be made whereby the child was to be sent from school to a public dispensary every day, in order that the ears might be properly syringed out and

attended to by a nurse. The school doctor gave the mother a letter for the school teacher to the effect that the mother agreed to this, to be given to the school teacher by the child. Three days afterwards a teacher called on the dispensary doctor to inquire when treatment might begin, as she had heard about it from the nurse. It then appeared that the letter had not been delivered. Another teacher then visited the child's home and secured the school doctor's letter—"it had been forgotten." After this the child attended at the dispensary most days, but never on Saturdays, when it "minded the baby." As soon as the summer vacation began the child also ceased attending. No doubt by now the ears, which were in a most exceedingly serious and foul condition, are just as bad as they ever were. And the measures taken to get the treatment were all quite independent of numerous official letters and inquiries about the child, involving the labor of clerks and other officials on a fruitless task.

And even when this great, and compared with the results, disproportionate exertion, such a child has been cured of one definite ailment, it very often presents another. Frequently a poverty group child shows more than one defect, often several defects, and the cure of one may leave the other unaffected. And the cure of all definite ailments may still leave the groundwork of anæmia and a debilitated constitution unaffected. To get a poverty group child into a good state of health often involves prolonged, and expensive, treatment, one or more operations, on ear, glands in the neck, tonsils or adenoids, a stay in hospital and at a convalescent home and perhaps a prolonged three to six months' holiday in some country cottage. All of which mean much money and very much expenditure of time and energy.

To continue the present methods of dealing with the poverty group children is to perpetuate the diseases and defects from which they suffer. Nothing but a special organization to meet the special case will be of any great service. What is done at present is of immense help in ameliorating conditions, in easing pain, in keeping the worst conditions from spreading too widely; but what is done at present is costly, cumbrous, involves

great labor, and effects no permanent result.

The special organization required is a school institution for the treatment of disease and for the practical exemplification of hygiene and cleanliness. The clinic must be part of the school organization, otherwise the poverty-group children will not get treated, for the various reasons indicated above. If medical treatment is as much a part of the school work as manual training or housewifery, then it will have a chance to be effective. The educated observation of the teacher will be at hand and at the doctor's disposal to supplement the hap-hazard observation of the parent, the report of the school medical inspector and the observation of the school nurse will be available, and the machinery of the school organization, with school nurse, attendance officer, and Children's Care Committee, will be at his disposal for

the purpose of carrying out necessary instructions in the home and out of school hours. In a word, instead of endeavoring to treat an ailing child by the agency of half-a-dozen badly co-ordinated or entirely separate institutions with no effective grip anywhere, we shall be treating the same ailment as a part of the school life, with the necessary means entirely at our disposal, and with all the other agencies adequately co-ordinated and properly effective.

All the activities controlled and directed by the Care Committee should be worked in the closest co-operation with the school clinic. This is especially true of the provision of meals for necessitous children, but it is also true of the provision of boots and of clothing and of the arrangement of country holidays.

But the details of organization of the clinic must be left for my next article.

VENTILATION IN SCHOOLS

By W. A. EVANS, M.D., D.P.H., Ex-Health Officer of Chicago

Good air and sunlight are necessary at every age period. Probably this need is never greater than during the school years. From seven to seventeen the body is changing greatly. These are the years of plasticity, and at the same time they are the years in which plasticity begins to give way to crystallizing. It is a bad time for the body to get below par. Habits are being established. Eye accommodation is finding itself; the shape of the lens is being established.

There is some reason for believing that the body is charged with a certain number of potential units. When a certain number have been used, repair is possible. There comes a point beyond which repair cannot be established.

If a child is under strain of eye or brain for ten years in the school-room, the effect may not be seen at once, yet it will figure in the failures of recuperation which are experienced years afterward. Therefore the school years are tremendously important.

The Chicago schools are heated by hot, dry air. In the higher-grade installations the temperature is held at 72 deg. F. The relative humidity is 30. One thousand eight hundred cubic feet of air per pupil per hour is pumped into the room. In the older installations we frequently found the temperature well over 75 deg. F.; that because 1,800 cubic feet per pupil per hour is pumped in the ventilation is as it should be. The assumption is rarely justified.

Many clinical observations have demonstrated that school children do not do well in badly ventilated rooms. Dr. A. W. Schram, of the Graham School, found that such children were prone to infection with the contagious diseases, they had colds, "snuffles," enlarged glands and tonsils. They were mouth breathers; they were pale, flabby, nervous, and subject to headaches. Principal Watt, of the same school, found that they did not learn readily. They were dull and inattentive.

The windows were raised, the air made fresh and moist, the temperature was

lowered to 60 deg. and below, according to the outside temperature. The result was that the children were healthier, freer from colds and infections; the "snuffles" decreased. Besides this the children learned faster and better. The principal, viewing it from the pedagogic standpoint, was more impressed even than the school doctor.

As to light: I am strongly of the opinion that the room should be narrow; that it should not be wider than twice the distance from the top of the window to the floor; that the proportion of floor space to wall space should not exceed one to four; that the windows should be so placed that the light comes from behind or to the sides of the pupils, or, rather, that in looking toward their books, the teacher, or the blackboard, they should not have to look directly at a strong light, or their books should not be shadowed so as to strain the eyes.

These effects can be had in various ways. The teacher can be seated at the back of the rooms, with the students' backs to the teacher; or shades pulling up from below can make a dark background for the pupils, or the teacher can be so placed in the room that the wall furnishes a dark background. Blackboards should be treated in the same way.

Believing, as I do, that the removal of air should be as direct as possible, I believe in low ceilings. Between the ceiling and the heads of the occupants is a volume of warm, foul air, which is being chilled and dropping into the breathing zone all of the time. The less space you have, the less foul air there will be to drop back into the breathing zone. I therefore believe in an eight or nine-foot ceiling. You will get the operators to heat only a certain volume of air and they will heat the same volume whether the ceiling is 8 feet or 12. By taking off the extra 4 feet you increase the amount of air which will be furnished in the breathing zone and that is what counts.

But the principal thing which should interest us is ventilation. The harm which is done by bad air falls into two general groups: The quick-acting or air-borne infections, and the slow-acting or air-caused conditions. Some illustrations of the former are influenza, common colds and cerebro-spinal meningitis, and possibly

anterior poliomyelitis, diseases in which the bacteria can be transported considerable distances; pneumonia and tuberculosis, where infections cannot be transported far, and scarlet fever, diphtheria, and measles which can only be transported very short distances.

The causative agents in the first group in the order of their importance are: Bacteria, dust, humidity, heat, organic exhalations and odors; carbon monoxide and carbon dioxide, almost negligible.

The causative factors in the second group in the order of their importance are: Heat, humidity, organic exhalations, carbon dioxide, carbon monoxide, bacteria, dust, odors. These different elements, with the exception of bacteria, have been so thoroughly discussed that I need not discuss them now.

Many efforts have been made to discover pathogenic bacteria in air. In these cultures saprophytes usually overgrow, and the tests are negative for tubercle and the usual pathogenic bacteria. Conclusions that pathogenic bacteria are not spread by air cannot be logically drawn. Efforts to find typhoid in a general water supply which we are certain is spreading typhoid fever are unsuccessful. Efforts to find typhoid in a milk supply proved epidemiologically to be typhoid spreading have proven fruitless. Nevertheless, we do not conclude that there is no typhoid there.

The mouth has been filled with *Bacillus prodigiosus*, and petri plates have been exposed at varying distance, with quiet breathing, talking, coughing, etc. From this it has been concluded that bacteria can be thrown through the air about 20 feet, and the inference is drawn that that is the limit of the danger zone. The air in front of quiet breathers has been found to have fewer bacteria than when the same air was inhaled. The sum total of all of these observations is an idea that bacteria are not air-borne; that they are spread by physical contact. I contend that the inference is unwarranted. Such experiments would have to be impossibly protracted to give results from which conclusions could be drawn.

A person breathes 16 times a minute for 75 years. The absence of pathogenic bacteria from a given cubic yard of air does not prove that there will not be patho-

genic bacteria in some of the other yards of air which the man will breathe in his lifetime. And a man only gets consumption once, scarlet fever and diphtheria once; few get pneumonia more than once. More than that: Let us say that only one man in four gets a tuberculosis infection; that is, a total 300-year period with 16 breath intakes during each minute of 300 years. What conclusion, then, is justified from a determination of the bacteria content of a single cubic yard of air?

Ventilation in schools is necessary for comfort during September and October, and May, June, July, and August in the Chicago climate. In the South we should add April at the front end of the season and November at the rear end. We may say, then, that a study of ventilation resolves itself into a study of ventilation for the months of November, December, January, February, March and April. It is not of much importance during November and April. January and February are the very trying months.

It has been our observation that school air is too hot and too dry. The temperature has ranged from 70 to 80 deg.; the humidity has been 30 to 40. The dust content has not been high. The odors are objectionable in certain schools in the poorer parts of town and in many schools on rainy days.

The Chicago schools are heated and ventilated as one item. The system used is the Waters. The air is taken in about 30 feet above the ground. It is not cleaned. It is heated to about 110 to 130 deg., according to the temperature of the outside air, the velocity and the direction of the wind, and the sunshine. It is discharged into the school-room at a point above the head of the teacher by a large opening. It is discharged under an average velocity of 370 feet per minute. It is exhausted near the floor line and usually on the same wall as the inlet. Eighteen hundred cubic feet per pupil per hour is pumped in.

The theory is that the air, being hot and going at a considerable velocity, will rise to the ceiling and flow across to the opposite wall, where it will fall from wall chill and then flow back along the floor to find its outlet. The system is plenum. Should the system work according to theory, the breathing zone of the children

at the desks would be dead, and, therefore, polluted air. As a matter of fact, there are many currents and the air begins dropping to the floor almost as soon as it issues. The children situated back in the room do not get a very good supply of air. Much of the air short-circuits from the inlet to the outlet after travelling a short distance in the room.

What is the remedy proposed?

First.—Reduce the temperature of the rooms to a maximum of 68 deg. This temperature is more bracing. In such a temperature the exhaled air, being hot and moist, will rise right out of the breathing zone and be supplied by purer air.

Second.—Raise the humidity to 60 to 70. No possible objection can be raised to this except that it costs money to evaporate water and the windows will frost when the outside temperature gets to 20 deg. F. and below. The best way to humidify is to introduce a spray of steam into the column of incoming air, if the air is to be pumped in. If the humidity is raised to 60, the pupils will be comfortable with a temperature of 68 deg. F. What is saved on coal, as between 72 and 68 deg., will more than compensate for the steam which is used to humidify.

Some of the frosting of the windows can be prevented by putting a radiator under each window. In certain rare instances a fan throwing enough air against the glass to keep it warm can be used to prevent frosting. But, what harm does frosting do, anyway? Its harm is negligible as compared with the harm of over-dry air. It keeps out but little light, and under certain conditions of sunlight will give a mellow, softer light, than the unobstructed pane. If the air is brought into the room through the radiators, it can be humidified by pans of water or by some of the patent humidifiers.

Third.—Blow out the air in the room at stated intervals. This is best done by raising the windows and allowing the air to blow briskly through. A change of the air four times an hour will be effected by currents which are so mild that they will not lift bacteria. In consequence, the bacterial flora of the air neither decreases nor increases unless it is being modified by animal inhabitation. If, however, the wind blows briskly in and out through

windows, the bacterial flora of the air will be reduced 99 per cent. Practically, the way to effect this is to have the teacher throw up the windows when the children go out at recess. When they return they are warm, they have just made heat by exercising. By the time their heat equilibrium has returned to normal the heat equilibrium of the room will have been re-established.

Fourth.—Decrease the dust content of the air of the school-room by having the students at the blackboards use an eraser which is very slightly damp. A piece of cheesecloth fastened over the eraser does well; or the fat can be extracted from an ordinary eraser by ether or naphtha. If the eraser is too moist the board dries slowly.

Fifth.—Introduce the air into the room so as to keep the expired air as much separated from the fresh air as possible. This means direct removal of the air from the breathing zone. This cannot be done if the room is heated and ventilated by the same air. Such air is introduced at 110 to 130 deg. F. If it were introduced near the floor and the outlets were placed near the ceiling the hot air would rush straight from the inlet to the outlet and it would be very difficult to prevent great loss of heat. The only feasible thing to do when heating and ventilation are done with the same air is to put the hot air in high and take it out low. The more rational plan is to have the air enter directly from the outside through holes in the walls; these holes to be closed by adjustable diaphragms. The air should pass directly through radiators and be discharged into the room at such a temperature as to maintain a temperature of 65 to 68 deg.; other radiation to be a hot-water or steam gravity system.

The radiators should have water-evaporating attachments. The air should be introduced in the room at several different points through ducts inside the room, with many openings in the ducts; the exits to be on the inner walls at, in, or near the ceiling; the gathering ducts to lead to the attic with the smallest possible number of turns or angles. In a windy, cold climate, *e.g.*, that of Chicago, the duct

should lead to a central large exhaust fan in the attic. In a less cold climate—for example, Cincinnati or Louisville—the ducts can lead directly to the roof and open to the outside, surmounted with one of the perflation devices to accelerate suction and to prevent down draft. The philosophy of this suggestion is that when the weather is not extremely cold, and all bends and turns are eliminated from the exhaust ducts, the fans can be eliminated. In a milder climate, such as that at Memphis, the ducts can be made to discharge from each room directly to the outside air, the outlet being at the ceiling line. In the far south, *e.g.* New Orleans and Mobile, the windows can be used all winter long, both for inlets and outlets, with this single suggestion, that the radiators be so placed that they will come a foot or two higher than the bottom of the window. When in cold weather the window is raised 6 inches or a foot from the bottom, the cold air which enters through the opening will pass through the radiation.

The advantages of such a method over the present method are:

1. The cost of installation will be less than the cost of installation at present employed. The system of ducts is much simpler and the capacity of the fans will be much less.

2. The cost of maintenance will be much less.

- (a) On still days the fans will not run at all.

- (b) On windy days the fans need only be used to exhaust the air from the rooms on the leeward side. The rooms on the windward side will exhaust without any artificial aid.

- (c) The volume of air needed per pupil per hour can be reduced from 2,000 cubic feet per pupil per hour to 1,000 cubic feet per pupil per hour, or even less where the foul air is removed without much admixture with the fresh. In the language of the British Departmental Committee on Ventilation of Factories and Workshops, 1907, "The quantity of air depends on the distribution; and in many cases a relatively small quantity well distributed is far more effective than a large quantity badly distributed."

Editorial

Mortality Rates and Life Insurance.

There are three things, the expense rate, the interest rate, and the mortality rate, of approximately equal importance besides honest and intelligent management, upon which the success of a life insurance company depends. But it has remained for one of this Journal's contributors, Hiram J. Messenger, of Hartford, to convincingly point out to Life Insurance Executives the comparatively inadequate attention hitherto paid to what is admittedly the most important side of the mortality rate problem. As actuary, acting for the Association of Life Insurance Presidents, in investigating the sanitary conditions of American cities, Mr. Messenger has just presented a most thoughtful, scholarly and logical report, supplemented by conclusions to the effect that in all the wonderful development of life insurance during the past 60 years, efforts to secure a favorable mortality have been practically confined to the benefits resulting from a careful initial selection of risks, while the question of what can be done to keep down the claims by efforts to postpone or prevent the death of the insured, after granting the policy, has hardly been given serious consideration.

It is possible to make this field of work of great importance. Life Insurance Executives have the reputation of being shrewd, practical level-headed business men who know their own interests, says Mr. Messenger. Here is an opportunity for them to perform a valuable service for humanity and at the same time directly benefit their own companies and policy-holders. There is no doubt as to the great improvement in the mortality rate of the country during the last half century as a result of progress in sanitary science and its practical application—policy-holders having gained millions of dollars thereby. And possibilities of further improvement in the future are fully equal to that which has already taken place.

It would, however, be a great mistake to

attribute this gain to the benefit resulting from an initial selection of risks by medical examiners because a very large part of it is due to a lower mortality resulting from better sanitary conditions for which life insurance companies have very little right to take credit.

To come down to figures, the regular life insurance companies on this continent, exclusive of the industrial business, are paying about \$150,300,000 a year for death claims, or about \$12 per \$1,000 of insurance in force. If the rate were reduced from \$12 to \$11 per \$1,000 of insurance, the companies would gain in reduced claims about \$12,500,000 every year. To secure a favorable mortality these companies are now paying about \$6,000,000 per year for medical examinations and inspection reports before the risk is accepted, but practically nothing for this purpose after the policy is issued. Yet if they were to expend half as much in a combined effort to lower the mortality rate, probably the result in dollars and cents would be fully as great as results obtained from the money already expended upon initial medical examinations.

The average policy is about \$2,500; the average premium about \$100. If a company postpones the death of one of these policy-holders for one year it means an advantage to the life prolonged which could scarcely be measured in dollars and cents. To other policy-holders, who in the last analysis pay the death claims, it means that they receive one more premium of \$100 and have another year's use of the amount of the claim (\$100), making a total of \$200 additional receipts as the result of postponing the insured's death for one year. If this could be brought about by the expenditure of \$5 or \$10 or \$25, observes Mr. Messenger, it does not require any unusual acuteness to see that the investment is a good one for policy holders.

What is wanted then is a additional co-operation with our Public Health organizations, because such organizations, if given to understand that they would be

thus supported by the life insurance companies, could exert an even greater influence, than at present, in bringing about better hygienic conditions and lengthening the life of the insured.

Inter Alia.

The opinion is becoming generally expressed among those who have investigated the matter that the movement to establish dispensaries in numerous localities is one that offers the best chance of stamping out certain diseases and particularly tuberculosis. The patient in early stages is the one who can be most benefited, and while the admittedly less economical sanatoria have, of course, their uses, they should not be advocated in opposition to local centres of advice and treatment, nor as a superior means of prophylaxis. The watchword of every municipality should be prevention rather than cure, and the lesson should be learned that taxes spent on local education against disease and poverty yield higher returns than any investment in additional uncentralized or isolated institutions which involve the separation of the patient from his family and his work.

In this connection we might mention the Montreal Dispensary, the excellent conduct of which, regarding tuberculosis, lacks only municipal co-operation in order that the work may be followed up outside.

No one can visit this Montreal institution without being impressed with the need of such a dispensary in every community. Since the Montreal Dispensary opening, 17 months ago, there have been over 12,000 consultations; there being splendid co-operation between the hospitals of Montreal and the Dispensary, which is now recognized beyond question as the prime factor in the solution of the tuberculosis problem.

Apropos to Hiram J. Messenger's investigation into the sanitary conditions of cities, the fact is now becoming largely recognized that all unsanitary conditions bring heavy expense; the loss of efficiency which attends sickness is very great. Hitherto, and still in many places, the people winked at the ounce of prevention, while keeping up the pound expenditure for cure, ordinary appeals having been useless from the fact of existing ignorance with its accompanying conceit, apathy, procrastination and the clutch of the dollar with its attending ideas of false economy. As avarice, ignorance, apathy, procrastination and conceit are recognized sins, is it strange to find them the cause of the sins of unsanitary conditions?

Of all unsanitary sins the unsanitary school-house is by far the worst, resulting as it does, in the injury to defenceless children. The school house which is not thoroughly ventilated with ample ventilating ducts, or which is not thoroughly and properly lighted, or which is not properly warmed nor kept clean, or which has not an ample supply of pure water or has abominable out-houses, marks the community in which it exists as ignorant, cruel and extravagant. Such school houses bring insufficiency upon teacher and pupils and inadequate returns for tax expenditures.

The ignorant trustee, whose only idea of economy is to spend less than his predecessor, is a dangerous man. And it is proposed to assist in the dissipation of such ignorance by establishing permanent buildings upon our provincial exhibition grounds, where, during at least two weeks yearly, exhibitions and lectures may be given, demonstrating the result of the opposite policy of expenditure on sanitary works and how finally preventable poverty and disease may be stamped out.

Library and Laboratory

The Public Health.

It is to be regretted that the ideas of the average householder, citizen, trustee, alderman, or mayor, on the public health, are rather vague. They have a general idea of the necessity of drains, of civic cleanliness, of pure water, and there they stop. On the contrary, no municipal building, no legal library, indeed, no doctor's library, should be without a text book on public health.

We are reminded of this by the appearance of a fine text book on public health by Prof. John Glaister, F.R.S.E., of the University of Glasgow, whom a good many of the profession will remember as an honored guest when the British Medical Association met in Toronto in 1906. Prof. Glaister has produced a volume which treats this great subject with a thoroughness, accuracy and scientific interest which will make his book a power.—*E. & S. Livingstone, 15 Teviot Place, Edinburgh, 622 pages; \$2.50.*

Egouts et Vidanges, Ordures menageres, Cimetieres.

La destruction des matières usées est un des plus gros problèmes de l'hygiène à l'heure actuelle. Elle est traitée d'une façon remarquable dans le nouveau volume du *Traité d'hygiène* de MM. Chantemesse et Mosny qui vient de paraître. Ce volume est dû à la collaboration de MM. Calmette, directeur de l'Institut Pasteur de Lille, Imbeaux, directeur de service municipal de Nancy, et Pottevin, secrétaire de l'Office international d'hygiène.

Voici un aperçu des matières traitées :

Epuraton des eaux d'égout urbaines et industrielles, par le Dr. A. Calmette, directeur de l'Institut Pasteur de Lille: Variations de composition et de débit des eaux d'égout des villes.—Système unitaire et système séparatif. — Composition des eaux résiduaires industrielles. — Conditions déterminant le choix d'un procédé d'épuration. — Inconvénients des procédés de traitement chimique appliqués aux eaux résiduaires urbaines. — La question des

boues. — Principes de l'épuration biologique naturelle. — Auto-épuration des cours d'eau. — Epannage. — Irrigation agricole. — Filtration intermittente. — Principes de l'épuration biologique artificielle. — Décantation préalable des eaux d'égout. — Coût comparé des différentes méthodes de traitement des boues. — Elimination par précipitation chimique des matières en suspension dans les égouts. — L'épuration biologique naturelle sur la terre arable. — Utilisation agricole des eaux d'égout. — Epannage agricole à Paris, en France, en Allemagne, en Angleterre. — Frais d'installation des champs d'épandage. — L'épuration biologique artificielle. — Fosses septiques. — Lits bactériens. — Travail et coût comparés des lits de contact et des lits percolateurs. — Contrôle de l'efficacité de l'épuration. — Méthodes d'analyse. — L'épuration biologique des eaux d'égout dans les raisons particulières, dans les hôpitaux, les casernes et autres établissements collectifs. — L'épuration biologique artificielle des eaux d'égout en Angleterre, en Allemagne et aux Etats-Unis. — Traitement des eaux résiduaires industrielles. — Législation relative à la protection des cours d'eau. — Le problème de l'épuration des eaux d'égout dans les agglomérations urbaines. — Procédés de choix suivant les circonstances locales.

Evacuation des immondices liquides, égouts et vidanges, par le Dr. Ed. Imbeaux: Eaux ménagères, eaux-vannes, eaux résiduaires industrielles. — Eaux pluviales. — Eaux d'égout. — Procédé d'évacuation. — Procédés statiques ou de conservation des matières. — Puits absorbants. — Fosses fixes à vidange. — Tinettes filtrantes. — Destruction et stérilisation des matières par la chaleur. — Procédés dynamiques ou d'entraînement par l'eau. — Le tout à l'égout. — Système unitaire et système séparatif. — Etablissement et exploitation des égouts. — Mode de construction. — Aération et cheminée de d'aération: désodorisation. — Exploitation des égouts: curage et entretien.

Les ordures ménagères, par le Dr. H. Pottevin: Régime de la collecte. Récipients et véhicules. — Hygiène de la collecte. — Le chiffonnage. — Les récipients et le matériel de transport. — L'évacuation aux décharges. — Le jet à la mer. — L'utilisation agricole. — L'engrais gadoues et son utilisation en général. — Les gadoues broyées; la poudre de gadoue. — Hygiène de l'utilisation agricole. — L'incinération. — Dépenses et recettes. — Hygiène de l'incinération. — Procédés d'utilisation divers. — Fabrication d'agglomérés. — Le système de la collecte séparative. — Application du système en Amérique.

Les Cimetières, par le Dr. H. Pottevin: La destruction des cadavres dans le sol. — Installation des cimetières. — Aménagement du sol. — Sépulture en caveaux. — Dépôts mortuaires. — L'hygiène publique et les cimetières. — La crémation. — Réglementation des sépultures.—*Egouts et Vidanges, Ordures ménagères, Cimetières*, par A. Calmette, Imbeaux et Pottevin, 1 vol. gr. in-8 de 568 pages avec 268 figures. Broché: 14 fr.; cart: 15 fr. 50 (Librairie J.-B. Bailière et fils, 19, rue Hautefeuille, à Paris).

The Canadian Newspaper Directory for 1911.

We have just received from the publishers, A. McKim, Limited, of Montreal and Toronto, a copy of the 1911 Edition of the Canadian Newspaper Directory.

This is the Seventh Edition of this valuable work, which fills a very real need in Canada.

The Canadian Newspaper Directory lists and describes 1,526 periodicals in Canada and Newfoundland. Of these, 136 are daily, 1,102 weekly or semi-weekly, 265 monthly or semi-monthly, and 23 are published less frequently. This is a considerable increase over the last edition.

In addition to this, the Directory supplies a comprehensive Gazetteer giving the population, the chief industries, the railway, telegraph and banking facilities and other interesting features of every newspaper city, town and village in Canada.

This work contains over 475 pages. It is splendidly bound and is certainly a credit alike to the publishers and to Canadian newspapers generally.

A. McKim, Limited, are particularly well qualified to edit and publish this, the

standard book of reference on Canadian publications. They are the pioneers in the advertising agency field in the Dominion, the McKim Agency having been founded in Montreal in January, 1889, 22 years ago, by Mr. Anson McKim, who is still at the head of the business.—*The Canadian Newspaper Directory for 1911. A. McKim, Limited, Montreal and Toronto, Canada. Price, \$2.00.*

Health Hints.

Under the above heading, Edward R. Pritchard, Secretary of the Chicago Department of Health, has produced a book devoted to showing how the menace of urban living may be removed. The author discusses what may be done for the relief of human suffering through governmental agencies. The indifference with which human life has been regarded hitherto on this continent he regards as little short of criminal folly. We spend thousands of dollars a year to rid our hogs of the cholera and leave the humans to shift for themselves.

"The national governments maintain life-saving stations for the rescue of those in danger of drowning. Why is it not just as important that they establish life-saving stations for the rescue of men, women and children from the preventable diseases, such as consumption and typhoid, which are now costing so many lives?"

"These life-saving stations should take the form of schools and institutions for the dissemination of knowledge on health subjects and of sanatoria for the treatment of tuberculosis. It is high time our legislators were waking up to the fact that the people are more interested in protecting the public health than they are in the tariff question.

"The chairman of the Ways and Means Committee of the lower house of Congress states that 70 cents out of every dollar of the government revenues are expended to provide for expected wars or to pay the bills for wars that have already taken place. And yet this is a so-called era of peace! Let us see: The navy costs the people, approximately, every year the tidy little sum of \$122,000,000, the War Department \$95,000,000, and \$165,000,000 are spent in payment of pensions. All this vast sum, aggregating \$382,000,000, will be expended on account of wars.

"If only the United States Government see its way clear to devote, say 10 per cent. of this vast sum to the stamping out of tuberculosis in this country, and keep it up at the same rate for the next ten years, how much might be accomplished in the saving of human life and in adding to the sum of human health and happiness.

"Last year a certain state legislature appropriated \$70,000 for stamping out disease among the domestic animals of the state and \$10,000 for the prevention of tuberculosis among the people. And yet in this same state the money cost of consumption amounts to \$8,000,000 each year. Other legislative bodies, including even the Congress of the United States, are guilty of the same sort of inconsistency—putting it mildly.

"It is time for the people to demand of their legislative servants that more fitting recognition be given to health matters and more money appropriated for the work of promoting and protecting public health."

Later on, pursuing the same subject, Mr. Pritchard says:

"There is much talk about the tariff, and widely differing opinions on the subject. Without at all attempting to belittle the tariff issue as a question of great national importance, it may safely be asserted that the health of the 90,000,000 of people in this country is of more importance, as a factor in our national power and prosperity, than is the tariff question.

"Consumption alone kills 138,000 people in the United States each year. The estimated cost of loss is placed at \$8,000 for each life, making the almost incalculable total of \$1,104,000,000 a year. As consumption is one of the diseases responding to sanitary administration, Congress might well hurry up and get through tinkering with the tariff and then study up on health matters a little.

"Having passed a bill providing for the establishment of a state school of sanitary science and public health as a part of Cornell University, New York is blazing the way for its sister states. The purpose of the bill is 'to aid in acquiring practical knowledge and in diffusing useful information on subjects relating to sanitary science and public health and to promote scientific investigation and research respecting the principles and application of sanitary science. Also to train and edu-

cate students in all matters pertaining to the public health.'

"Here is an excellent suggestion to all state legislative bodies to follow the lead of New York and see to it that their respective state universities are equipped to maintain schools of the kind that is to be established at Cornell."

Mr. Pritchard's book is minutely subdivided, each topic being treated under a separate head and so simply that nobody can fail to grasp the meaning of his words. Dirt, dust and darkness are the favorite breeding place of germs, he says over and over again. The public health depends upon plenty of air and sunlight, in which disease germs cannot live.

"It is possible," he says, "for a man to live three weeks without food; three days without water, and three minutes without air. This simple statement of a well-known fact should make it very clear that air, fresh, pure air, is the most important element in the world for the sustaining of life. It is also equally important that in order to perform the best labor, to do the best work in any occupation, human beings must be plentifully supplied with pure air.

"It is strange that employers of labor, owners of mills, factories and shops, do not recognize the economy of providing clean, well ventilated rooms for their employes. Perhaps it may be that this side of the problem has never been presented to them. As a rule, when you can show a man how to save money he will 'sit up and take notice.' Show the owner or superintendent of a factory how he can increase the efficiency of his force—that is, get more work out of them without increasing their pay—and he will adopt the suggestion without hesitation.

"There is no question but that a force of employees working under good sanitary conditions as to light, air and general comfort will do much more work and much better work than a like number of employees engaged in the same occupation will perform in a room where the sanitary conditions are bad. A striking instance of this has been furnished by Prof. Winslow of the Boston School of Technology. The tollroom of the New England Telephone and Telegraph Company at Cambridge is long and narrow, with windows only at each end. In winter the employees refused to work with these windows open, and as a result the

air became very foul. The telephone company paid little or no attention to these conditions until it noticed that practically one-half of their working force of 60-odd girls was absent from duty nearly all the time.

"At an expense of not to exceed \$100 an air duct was built along the ceiling, opening to the street at the front and discharging fresh air into the room through inch and a quarter holes. Fans were placed at the rear of the room to draw out the foul or vitiated air. A marked improvement in the working conditions was apparent at once. The percentage of absences was reduced to 1.9 per cent. of the entire working force. The girls improved in health and vitality and their work was in every way more satisfactory."

Mr. Pritchard reviews briefly the investigations which have been made into the "overcrowding evil" so common in urban centres.

"It is well understood," he says, "that rooms that are illy lighted and poorly ventilated are unfit for human habitation, either as dwellings, workshops, or places of business. Quarters of this kind are extremely unhealthful and people who live in them are subject to such diseases as rickets, scrofula, and especially tuberculosis. Children who are reared in places of this kind are puny, pale, sickly — much like a plant that has been reared in similar surroundings.

"Among certain people there is a tendency to flock together, to economize on rents by overcrowding. This is poor economy. The expenses of sickness and death are largely increased, and amount to a great deal more than the savings in rent. It is far better to pay more rent and fewer doctor's bills.

"Insanitary dwellings are found everywhere. Of course, they are more numerous in towns and cities, but it is no uncommon thing to find them even in the rural districts.

"One of the important municipal problems is to correct existing evils in tenement districts. This is done by the enactment and enforcement of laws regulating structural conditions and providing sufficient light and ventilation, but when all this is done it requires separate and distinct legislation to correct evils of overcrowding."

Under the heading "Prevention

Counts," Mr. Pritchard sums up some of the conquests which preventive methods have made of the dread scourges of yesterday.

"About ten years ago it was discovered that a certain species of mosquito transmitted yellow fever. Preventive methods were at once vigorously applied, and with the result that this dreaded scourge to human life has practically been wiped out of existence in the United States.

"One hundred years ago there was scarcely a woman in London whose face was not scarred with smallpox, and every year this terrible disease numbered its victims by thousands. To-day, thanks to vaccination, it is unknown in epidemic form and the few cases we have are only those of persons too ignorant or careless to have themselves protected by being vaccinated. Before vaccination was discovered and practiced as it is to-day smallpox killed more soldiers in the army of Europe than were killed by bullets. To-day in the armies of the old world this disease is unknown.

"So you see prevention pays and pays big. Money spent along these lines pays better returns than any other form of investment. If there is any knowledge that we should be eager and glad to get it is the knowledge of how to prevent disease and how to keep well."—*Health Hints, by Edward R. Pritchard; Rielley and Britton Company, Chicago.*

Plumbing and Household Sanitation.

Here is a comprehensive work which proves that, no matter what subject may be chosen, there needs only a writer of authority and enthusiasm to make it interesting. The subject of plumbing might not be thought to afford material for a book of unusual dimensions and of prime importance; but that, perhaps, is because the rank and file of people do not understand what an important part plumbing has to play in relation to the public health, what constant study has been expended upon the subject from early times, what tremendous improvements have been made in the matter of apparatus, how the laws of cities and states have had to take hold of the subject, and how plumbing has become a science rather than a craft.

All of this is what Mr. Putnam has had in mind in preparing his thorough and

careful work. He easily makes it appear that as the homely function of fertilizing the soil is the foundation of the garden in bloom, so the proper methods of making the house sanitary is the first essential in bringing civilization to its flower.

The author writes as a member of the Boston Society of Architects and of the American Institute of Architects. The material offered in his new volume originally served as the basis of a course of lectures delivered in Boston. But a very thorough revision of the original text is apparent, as the material here presented has the quality of the printed word, instead of that of the spoken word.

The problem of bringing pure water to cities and houses and of getting rid of impure water without detriment to health must have been a foremost one in every age of civilization. Mr. Putnam covers a wide canvass in his present study, supplying frequent references to the manner in which the problems indicated were met by the Romans, and by the people of the Middle Ages, down to the present day.

Both sides of the problem are shown. The elegance as well as the crudities of methods which prevailed centuries ago are described, and the highly skilled devices of to-day — together with the occasional failure to profit by even ordinary devices — are set forth in pictures and text.

The relation of what the author calls the "science of modern plumbing" to the other modern sciences of bacteriology and hygiene is shown, from the standpoint of the thorough chemist.

Indeed, the relation between health and plumbing is set forth in a great variety of ways, from studies of microbes to analyses of sewer air.

The illustrations range in subject from the ancient Roman baths to the latest inventions and devices for making the science of modern plumbing economical and hygienic. — "*Plumbing and Household Sanitation*," by J. Pickering Putnam.

Medical Men in the Time of Christ.

To the student of medical history anything is of interest that helps to throw light upon the state of the medical profession in the past; therefore a book such as *Medical Men in the Time of Christ*, by Dr. Robert N. Willson, of Philadelphia, which contains many details concerning

the social and scientific position of the doctor in the early days of the Roman Empire, will be welcomed by a certain section of the reading public. Commencing with an outline of the history of medicine from its earliest beginnings at the dawn of the world (for we are told that "there are many indications that medical knowledge of a primitive type may be traced to the beginning of human existence"), Dr. Willson gives a graphic description of the immense difference which existed in the status of the doctor at different periods and in different parts of the ancient world. Thus, for example, whilst in such countries as Greece, Egypt, or Palestine, the medical profession, possibly on account of its close connection during many centuries with the priesthood, was always regarded with peculiar veneration, in Rome under the Republic, where "the fact that their services commanded an honorarium had relegated the physician and the surgeon to the unpopular class of artisans that strove for money gain," medicine was looked down upon as an occupation fit only for the *Gresulus esuriens*, who, to make matters worse, was usually a slave. It was not until the emancipation of the Greek physicians by Julius Caesar in 49 B.C. that "the medical profession came out of bondage into its own," and for the first time was considered an honorable calling for a free-born citizen of Rome. It is interesting to note that at the time of our Lord's birth the Jewish physicians, afterwards famous throughout the Middle Ages for their knowledge and skill, were already to be found practising in most of the Roman provinces, and, even at that early date, seem to have been greatly esteemed for their learning. They do not appear to have enjoyed a similar reputation for virtue, at any rate amongst their own countrymen, if we are to accept the evidence of the Talmud, where it is gravely stated that whilst "all ass-drivers are wicked, camel-drivers are honest, sailors are pious, physicians are destined for hell." Even the best is doomed to this fate (*Medicorum optimus dignus est Gehenna*). It is possible that at times these amazing sentiments were shared by their Gentile patients, at least if the Hebrew doctors steadfastly adhered to some of the precepts laid down in the Talmud, which taught that an oath sworn to a Gentile was never binding on a Jew, and that it was permissible for

one of the Chosen People "to heal Gentiles only for the sake of the fee, or for the practice of medicine, but it was not allowed to save their lives in seasons of danger."

It is the sidelights on history which are afforded by details such as these that make Dr. Willson's book well worth reading. It is a pity, however, that the author, whose work shows evident signs of a careful study of his subject, has not exercised more discrimination in the handling of his materials, and so avoided a certain amount of confusion in his narrative. This, however, is the only drawback to an otherwise very readable account of the medical profession at a critical period of its development, which derives much additional interest from the finely reproduced photographs with which the volume is illustrated.—*Medical Men in the Time of Christ*, by Robert N. Willson, M.D.; published by the Sunday School Times Company, Philadelphia. 1910. Pp. 157. \$1.

Book Announcements, for Later Review.

The Inspection of Fish, Poultry, Game, Fruit, Nuts and Vegetables.—By A. Horace Walker, Sanitary Inspector to the Metropolitan Borough of St. Pancras, Late Instructor and Lecturer to the Essex, Middlesex and Hertfordshire County Councils. Demy 8vo; XII. x 180 pages; 22 illustrations. 5s. net. London: Balliere, Tindall and Cox, 8 Henrietta Street, Convent Garden, 1911.

A Practical Guide in the Preparation of Town Planning Schemes; with maps in Thumb Case—By E. G. Bentley, LL.B.; and S. Pointon Taylor, A.R.I.B.A. (Members of the National Housing Council), with a foreword by Raymond Unwin. Demy 8vo; 160 pages. 5s. net. London: George Philip and Son, Limited, 32 Fleet Street, E.C.

Hygiene for Nurses; Theoretical and Practical.—By Herbert W. G. MacLeod, B.Sc., M.D., M.S. Edin., M.R.C.P. Lond., D.P.H. Lond., D.P.H. Camb. Crown 8vo; 233 pages; 23 illustrations. 3/6 net. London: Smith, Elder and Co., 15 Waterloo Place. 1911.

Antiquated Public Health Legislation.

The decision of the Supreme Court of Massachusetts with reference to the bot-

tling of milk in the city of Boston, the Trenton egg trial and the agitation a year ago or more with reference to beef from cows affected with tuberculosis are quickly recurring evidences of the need of the establishment, first of a new set of definitions, and, second, legislation in health matters of a pattern more in accord with modern knowledge of disease. *The Transcript Clinic* points out that the beef question reduced to its lowest terms was practically, whether local lesions in an animal makes its meat unfit for food; in the Trenton egg case the issue was whether that continual change in all organic bodies called decomposition was in a certain lot of eggs sufficiently advanced to make them unfit for food; and in the milk case, how applicable is the antiquated definition, "nuisance, source of filth and cause of sickness," to the functions of a modern board of health working under the advances in science of the past ten or fifteen years? This question of re-defining words to correspond with the specialization of knowledge is one that the physicians, sanitarians and officials should take up with vigor, in the interests of business men and of public officials, who on the one hand find their interests hampered and on the other, their activities curtailed, by the lack of precise definitions. A shrewd lawyer to-day, if his interests lay that way, might have no difficulty in proving that corns are sufficiently a disease to cause the animal so affected as to be confiscated and perhaps destroyed under the law, while on the other hand, the sanitarian knows that local lesions may in no way affect the food value of the creature, and to no extent, according to the best of the knowledge of to-day, affect the health of the individual consuming the same.

At Trenton it was very evident that new criteria must be established to measure the quality of eggs. The bacterial content, it was shown by evidence, that must have been a surprise to the Governments, is not a standard to be considered for a moment. It was furthermore shown that decomposition is a continuous process, and the same problem occurs in it that has so often puzzled the farmer, who is troubled in determining at what moment the pig becomes a hog. At what stage does the breaking down of organic cells in a food become a process of danger to the consumer of the food? This may usually be determined in

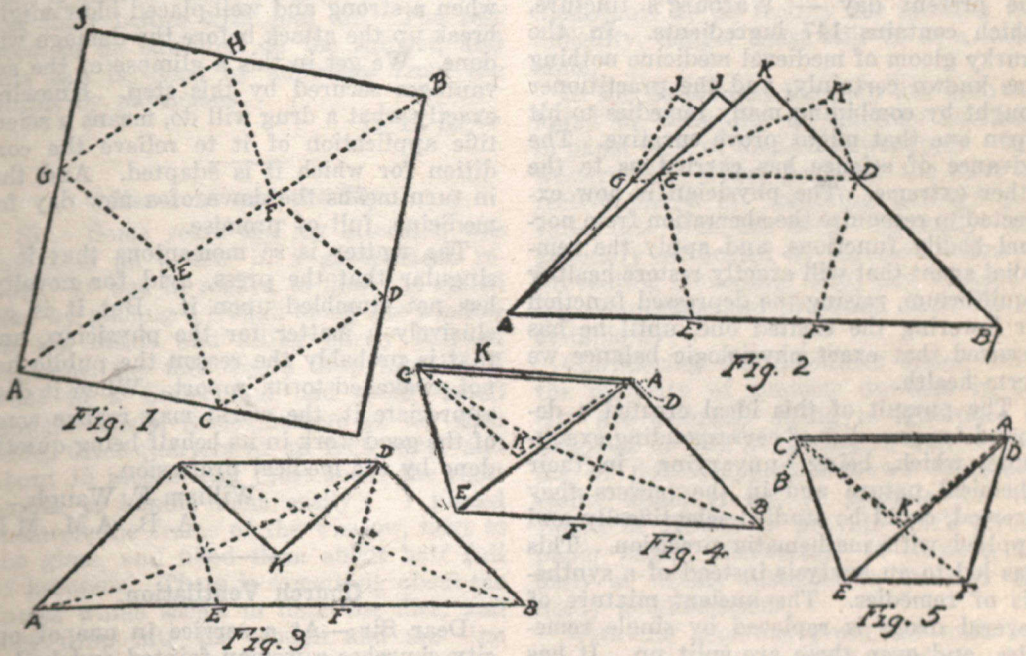
the good old-fashioned rule-of-thumb way, by smelling, and so far as eggs are concerned, there does not to-day exist any more reliable method. It is not fair to assert that no such standard can be established, simply there has been up to now no commercial nor scientific need of the determination. It is time to have the criteria for decomposition determined.

The Milk and Baby Hygiene Association, which has been investigating the subject, views with alarm the extensive use of condensed milk as a food for babies. In a report just issued the Association states that the increasing use is due to the "misleading of consumers by labels and advertisements into the belief that when largely diluted with water condensed milk yields

a mixture which closely approximates the composition of milk."

"Mixtures made according to the formulae suggested would be deficient in practically every instance in percentage of milk constituents as compared with human milk. Furthermore, they contain, or the printed directions suggest the addition of, cane sugar, which is deemed by many physicians an objectionable ingredient. The use of condensed milk for this purpose no doubt often costs infant life, and such use, except on physician's prescription, is to be vigorously condemned. The labels for these packages should bear a warning against the use of the contents as food for babies."

Making the "Cup Sanitary."



Secure a sheet of paper about eight or ten inches square. Fold it in the middle from corner A to corner B (Fig. 1 and 2). Next take the uppermost free corners, J to K, and fold down on each side to about one-third of the distance between top and bottom (Fig. 3). Next take the free corner A and bring it almost to D, and fold the paper at C E (Fig. 4). Then take

up the free corner K and insert it into the exposed fold between A and C. Now take the free corner B and bring it to G on the other side of the paper, tucking the free corner J into the exposed fold, D B, on that side (Fig. 5). Open the center, press in the bottom to give the structure rigidity, and fill with water.

Open Mail

To the Editor of the *Public Health Journal*,
State Medicine and Sanitary Review:

"The Simplicity of Modern Medicine."

SIR,—My attention was attracted by the title of a communication in your May number, entitled: "The 'Simplicity of Modern Medicine.'" The writer, "A. D.," gives two very interesting examples of simple surgical procedures, but one is at a loss to know how they can be denominated "medicines." However, simplicity has really reached the domain of medicine, bringing with it a precision in the application of remedies that is of the utmost influence over the treatment of disease.

Time was when the most favored remedy was that which contained the greatest number of drugs. One of these triumphs of the pharmacist has persisted even to the present day — Warburg's tincture, which contains 147 ingredients. In the murky gloom of medieval medicine nothing was known certainly, and the practitioner sought by combining many remedies to hit upon one that might prove curative. The advance of science has carried us to the other extreme. The physician is now expected to recognize the aberration from normal bodily functions, and apply the remedial agent that will exactly restore healthy equilibrium, raising the depressed function or lowering the excited one, until he has secured that exact physiologic balance we term health.

The pursuit of this ideal created a demand for remedies of corresponding exactitude, which, being unvarying in their chemical nature and in the powers they exerted, could be studied scientifically and applied with mathematic precision. This has led to an analysis instead of a synthesis of remedies. The ancient mixture of several drugs is replaced by single remedies, and even these are split up. It has long been known that plant drugs depend for their medicinal value on certain agents, known as active principles to distinguish them from the comparatively inert constituents, woody fibre, gum, sugar, starch,

etc. But few plants contain only one active principle. Jaborandi contains six, the yellow pessamine two, henbane two, celandine seventeen, opium twenty-six, and cinchona thirty. No two of these principles exert the same influence, and as they are developed unequally in different plants of the same variety, the medicinal effects vary correspondingly.

Curiously enough, we often find in the same plant agents directly antagonistic. Henbane may put a patient to sleep, or banish sleep absolutely. Jessamine may soothe excited nerves, or irritate them into convulsions. Jaborandi may cause sweating, or dry it up. It is this uncertainty that has paralyzed the arm of the physician in the past, making him timid when he should be bold, spending his time in cautious trials at the beginning of disease, when a strong and well-placed blow might break up the attack before the damage was done. We get in this a glimpse of the advantages secured by this step. Knowing exactly what a drug will do, means a scientific application of it to relieve the condition for which it is adapted. And this in turn means the dawn of a new day for medicine, full of promise.

The matter is so momentous that it is singular that the press, avid for novelty, has not stumbled upon it. But it is exclusively a matter for the physician, and that is probably the reason the public has not awakened to its import. When it does appreciate it, the world may realize some of the good work in its behalf being quietly done by the medical profession.

William F. Waugh,
A. B., A.M., M.D.

Church Ventilation.

Dear Sir:—At a service in one of our city churches a woman fainted and had to be carried out; one of those taking part in the choir nearly collapsed after finishing the part, and the congregation were using song leaflets as fans. These incidents go to make up only a single example

of what may be found in greater or less degree in churches every Sunday as a result of bad air. But, you say, cannot the windows be opened? Certainly, they can; but no sooner is one opened than somebody complains of a "draught," and it is closed again. Air that has been breathed once is a poison, and even though we breathe such air for one hour out of the twenty-four, I believe that breathing pure air the remaining twenty-three hours will not repair the injury done the body. A person who would be horrified at the idea of washing his hands in water in which another had washed makes no protest against breathing air which has been in the lungs not only of healthy persons, but of those suffering from catarrh, tuberculosis and other communicable diseases. And these are the conditions in most of our churches!

What are we going to do about it? The remedy lies partly in the pulpit and partly in the pew and in the installation of proper ventilating fixtures. Those who realize the gravity of the situation are justified in refusing to attend or to support a church which compels them to poison their bodies with foul air. The rest need to be educated on the subject, and this can be done by addresses from the pulpit by physicians.

C. B. R.

Kerosene and the Fly.

Sir,—Some years ago my attention was called to an article in a government report. It was in regard to flies. It stated that by placing a trough along the window on the inside and filling partly full of kerosene, the flies would drop into it. I went to a tinner and had some small troughs made, three-quarters of an inch wide, three-quarters of an inch deep, and about 15 inches long (just about the right length to handle them easily). I placed them on the frame of the window, next to the glass, and filled them about half full of kerosene. There is something about the fumes which seems to daze the flies, and they drop into the trough and are "no more." At a friend's place of business, which is wholesaling fruit and is usually bothered with flies more than most other trades, by using this simple trough, flies, which as you know always go to the windows, have largely diminished. These

troughs also keep your window clean, which is a big advantage. J. K.

A Sanitary Suggestion.

Sir,—Will you kindly allow one vitally interested in the summer campaign in Montreal to offer a suggestion through your columns.

The University Settlement in Dorchester street, in true settlement style, is facing the neighborhood problem of healthful living during the heated summer term. The garbage pail offers one of the daily, insistent problems and the residents are impressed with a feeling of neighborhood sympathy for those immediately around in such a congested section — who are blest with even less facility for handling this difficulty.

In every paper, by every public speaker on general sanitation, in the most necessary campaign against wrong conditions and the germ carrying fly, to which is traced general disease and infant mortality, one is urged to the most careful handling of all discarded vegetable and other matter — under crowded conditions, with inadequate or no facility for meeting this difficulty, danger must still be at a maximum.

In the Settlement the plan has been followed of wrapping all garbage carefully in paper bags or disused newspapers. In a western city, where probably the most effective means of handling garbage prevails, this plan has been insistently and generally advocated as the best means of preventing immediate decay and withdrawing temptation and provision from the inevitable fly.

Considering the difficulties under which the majority of summer dwellers in the city are laboring, owing to ignorance of language or lack of intelligent understanding of public appeal, however forcefully made, would it not be possible for the Board of Health to provide small strong paper bags, disinfected if feasible, for daily or weekly distribution through the needy neighborhoods.

With the generous grant for milk stations, with all that public-spirited effort can do in the cause of life, all will be more or less futile unless this all important question is taken up in some practical way.

ELIZABETH HELM.

University Settlement.

Meetings and Reports

DOMESTIC

Timely Regulations of the Provincial Board of Health of Ontario.

The following regulations are made under paragraph 13, of section 13, of the Ontario Public Health Act (amended 1911):

Regulation 1. No garbage, excreta, vegetable nor animal matter nor filth shall be deposited on or in any of the lakes, rivers, streams or other inland waters of the Province of Ontario.

Regulation 2. Residents of health resorts and summer resorts are hereby required to so dispose of their garbage, excreta, manure, vegetable or animal matter or filth that such shall not create a nuisance nor gain entrance to nor pollute any lake, river, stream or other inland water of the Province.

Regulation 3. The owners and officers of boats and other vessels plying upon any lake, river, stream or other inland water of the Province are hereby required to so dispose of the garbage, excreta, manure, vegetable or animal matter or filth upon such boats or vessels that such shall not create a nuisance nor gain entrance to, nor pollute such inland waters.

Regulation 4. Any contravention of the foregoing Regulations shall be subject to the penalties provided by the Public Health Act in respect thereto.

And further desirable Regulations are made under paragraph 14 of section 13, as follows:

Regulation 1. Hotels, restaurants, railway trains and depots, boats, and all other public places which provide a supply of drinking water for the use of the public shall at all times be required to provide that such drinking water shall be pure and wholesome.

Regulation 2. Any contravention of the foregoing Regulation shall be subject to the penalties provided by the Public Health Act in respect thereto.

The National Council of Women.

Possibly no organization is doing more to weave the principle, of doing unto others as you would that they should do unto you, into the social fabric of Canada than the National Council of Women. Their object is the practical one of drawing together the women workers of Canada in greater unity of thought, sympathy and purpose in order to further the application of the Golden Rule to society, custom and law. This object the council seeks to establish chiefly by means of standing committees, composed of a convenor, elected by the National Council, a member being elected by each nationality organized society in federation, and each local council, who in turn is convenor of a similar standing committee in her local council. By this means information as to conditions and needs is gathered from all parts of the country, and public opinion is created that leads to necessary action or to securing legislation when required.

That little is overlooked in the wide sweep of these committees in their inquiry and investigation is manifest from the separate departments, as follows:

- Laws for women and children.
- Objectionable printed matter.
- Custodial care of feeble-minded women.
- Care of the aged and infirm poor.
- Finance.
- Immigration.
- The Press Committee.
- Agriculture for Women.
- Citizenship.
- Vacation Schools and Supervised playgrounds.
- Suppression of the White Slave Traffic.
- Peace and arbitration.
- Public health.
- Education.

On these various types committees and sub-committees have been assiduously at work during the past year, and much in-

erest was displayed in the reports presented at the annual meeting last month in Port Arthur. Women from all parts of Canada, who devote their time and talents to the cause of womanhood and the betterment of the conditions of the less fortunate members of their sex, were present to discuss the progress of their order since their meeting last year in Halifax, and plan a campaign of legislative, educational and uplift work for the future. Discussions were held with a view to placing the various projects upon such a basis that application might be made to the Provincial Legislatures and the Federal Parliament for the introduction of new laws, or the modification of old laws, in keeping with the progressive aims of the National Council and for the welfare of women and children generally.

There are in Canada 25 Local Councils, each of which was entitled to send six delegates to the convention besides which the many affiliated societies, including the Women's Art Association, the Girls' Friendly Society, the Dominion Order of King's Daughters, and the Victorian Order of Nurses were entitled to two delegates each.

There are National Councils also in the United States, Germany, Sweden, Great Britain, Denmark, the Netherlands, Tasmania, New South Wales, Victoria, South Australia, Queensland, Italy, France, Argentina, Switzerland, Austria, Hungary, Norway, Belgium, Greece and Bulgaria, and representatives in Russia, Finland and Turkey.

These National Councils are federated and form the International Council, which was formed in Washington in 1888, and meets every five years. The first Quinquennial was held in Chicago in 1893, the second in London, England, in 1899, the third in Berlin, Germany, in 1904, and the fourth in Toronto, Canada, in 1909. The executive committee also meets twice between the quinquennial meetings.

The National Council of Women came into existence in 1893, under the auspices of the Countess of Aberdeen, the wife of our then Governor-General, and she became its first president. It was formed on the same lines as the National Council of the United States and the Council of Women Workers of Great Britain, namely, as a federation of women's societies. It represents all the provinces of the Domin-

ion. It is non-political, for women of all parties belong to its ranks. It is not attached to any particular creed, for members of all the Protestant churches and of the Roman Catholic church work together in the Council, as do also the adherents of the Jewish faith.

Twenty-five Local Councils, from Nova Scotia in the extreme east, to Vancouver Island in the extreme west, belong to the federation, and these Local Councils have in affiliation over 300 societies and institutions formed for every conceivable object. Fourteen nationally organized societies, including Women's Institutes, also belong. Once a year representatives meet in one or other of the principal cities of the Dominion to receive reports, to confer on subjects suggested by its executive or by the federated associations, in order to decide on any combined national action that may be deemed desirable, and to recommend lines of work or inquiry by the federated associations in their several provinces.

In this connection, the following part of an address by the late Lady Edgar is of interest:

"The Minister of Education in 1897 stated that the introduction of domestic science and manual training into our schools was entirely due to the efforts of the National Council of Women.

"Not in a spirit of vain-glory, but because I want to inform you as to the aims and work of this council, I will give you a resume of some of its other achievements.

"It has obtained the appointment of women on the Boards of School Trustees, and of women inspectors in the factories and workshops where women are employed, in the Provinces of Quebec and Ontario.

"It has obtained the extension of the provisions of the Factory Act to the Shop Act in Ontario as regards the supervision of women workers.

"It has obtained the appointment of women on the Boards of School Trustees in New Brunswick, and the amendment of the School Act so that they may be elected in British Columbia.

"It has brought about very desirable changes in the arrangements for women prisoners in various places.

"It has organized in several centres Boards of Associated Charities or other

systems of co-operation in the relief of distress.

"It has established hospitals in some of the smaller towns of the Dominion.

"It originated the Victorian Order of Nurses, and has taken a leading part in its establishment.

"It has spread sanitary knowledge, especially by means of Health Talks for mothers, given by physicians in Montreal. Halifax has also done good work in this department. It has also worked for medical inspection in the schools.

"It has held an inquiry all over the country into the circulation of impure literature, and has been able to do something to lessen it already, as well as to warn parents and teachers as to the very great danger that exists in this direction.

"It is also working to supply the youth of the country with good sound books.

"It conducted an inquiry in all the provinces into the laws for the protection of women and children, and laid certain recommendations before the Minister of Justice which he adopted when bringing in amendments to the criminal law.

"Through one of its affiliated societies it is endeavoring to plan for the better care and wiser distribution of women immigrants than has hitherto been possible.

"It is pledged to co-operate with the medical authorities in urging measures to be taken to check the ever-increasing ravages of consumptive diseases in this country.

"It is striving with success, notably in Montreal, Halifax and St. John, for the establishment of vacation schools and supervised playgrounds."

The corresponding secretary of the National Council of Women is Miss Riddell, of Toronto.

Eleventh Annual Convention of the Union of Canadian Municipalities.

W. D. Lighthall, Hon. Sec.-Treas., U. C. M., writes an official circular to all the municipalities of Canada as follows:

"The President and Executive of the Union of Canadian Municipalities, beg to call your attention to the occasion of the Eleventh Annual Convention, which will be held at the City Hall, Quebec, by invitation of His Worship Mayor Drouin, and the Council of the city of Quebec, on the

29th, 30 and 31st of August next.

"You, Mr. Mayor, and as many delegates as your Council desire to send, are cordially invited to attend, and to take part in the proceedings, or present any matter bearing on the welfare of municipalities.

"This is the first time the Union has been convened in the historic and beautiful cradle city of Canada, where a most cordial welcome will be extended to our delegates, and their ladies. Among other topics will be the live questions of: Town Planning and Embellishment; Special Functions of a Provincial Capital; Conservation of Water and Water Powers; Country Roads; Railway Terminals and Crossings; Street Railway Freight Carriers; Pure Food in Cities; Fire Protection.

"Please forward to me, as soon as possible, the names of intending delegates from your Council.

"There are several excellent hotels in Quebec, and you can be assured of good accommodation at reasonable prices. The Chateau Frontenac will be the headquarters of the Executive of the Union.

"A copy of the official programme will be mailed to you about August 1st.

Child Welfare Exhibition.

The death rate among infants and young children has been one of the crying disgraces of civilization. Herod's slaughter of the innocents, the story of which has served to horrify the world for twenty centuries, merely hastened the death of many of these babies, as probably the greater part of those whom his ruthless order condemned would have died within a few years from infantile ailments and zymotic diseases. Through the middle ages and up to the present day, the death rate of infants has had an unknown, but undoubtedly an enormous influence in keeping down the average, while the infant mortality among savages and barbarous nations is too dreadful to contemplate. It has remained for the present generation to realize that "race suicide" as a national peril is not to be compared to "child murder" by removable social and economic causes.

One of the most important problems confronting us is that of child conservation. A movement for the salvation of the child

is of far greater importance than the efforts to save our forests, rivers and mineral deposits from spoliation.. This is so evident that it is necessary only to demonstrate the facts to secure instant public response. Learning from previous efforts that public education and the arousing of public interest must precede all attempts to improve conditions, those behind this most important crusade have wisely inaugurated a system of public exhibits in the larger cities.

The City Improvement League of Montreal recently called a meeting of various bodies interested directly and indirectly in sociology to discuss the idea of holding a Child Welfare Exhibition in that city, following on the lines of that which proved such a success a while ago in New York, Chicago and elsewhere. So cordial was the support of the large number of representatives who answered the call, that it was determined to carry out the idea, and to hold an exhibition in October, 1912. An Executive Committee has been chosen, which is largely representative of the most important societies, and it is hoped that it will be all-Canadian in scope and interest. The Committee is composed as follows:— Presidents, Dr. J. G. Adami (Pres. M. City Impt. League), and T. Gauthier, Esq. (Pres. St. J. Baptiste Soc.). Committee: Prof. Carrick M. Derrick (Pres. Local C. Women); Madame Beique (Pres. La Fed. Nationale); L. Cohen, Esq. (Pres. B. de Hirsch Society); J. C. Walsh, Esq. (Pres. St. Patrick's Soc.); Rufus Smith, Esq. (Sec. Charity Organization Soc.); Dr. L. Gregor; J. V. Desaulniers, Esq.; Dr. Boucher; V. Morin, Esq.; Hon. Secs. Prof. Dale and O. Asselin, Esq.; Active Secretaries: Abbe Morrice and Dr. W. H. Atherton.

Hygienic Co-operation of Windsor.

Health officials of Windsor are uniting with the Detroit Board of Health in a protest against the dredging of the Black River at Port Huron under a United States Government contract. The matter has already been brought to the attention of Canadian health officials at Ottawa by Dr. J. A. Ashbaugh, Medical Health Officer of Windsor, who believes the carrying out of

the work may result in the pollution of the city's water supply.

A short time ago Dr. Ashbaugh took the matter up with Dr. J. W. S. McCullough, secretary of the Provincial Board of Health, and received a reply advising him to communicate with the Dominion health officials, as the proper authorities to deal with the question.

In a letter to Dr. F. Montizambert, Director-General of Public Health at Ottawa, he recites the fact that at least one epidemic of typhoid has been traced to former dredging of the Black River, and suggests that some representations be made with a view of protecting public health in the present case.

The Fifth Annual Report Upon Feeble-Minded in Ontario.

Dr. Helen MacMurchy, in her fifth annual report upon the feeble-minded in Ontario, made to the Provincial Secretary and by him made public, is somewhat of a revelation. The feeble-minded, the report points out, are so often irresponsible, and, being subject to trials and temptations peculiarly their own, become a menace, until the chronicler of them has good reason to cry out, "How long, Lord, how long shall these things be?"

The summing up of Dr. MacMurchy is very impressive. Of the school population of Ontario, about 600,000, it is estimated that .03 per cent. are feeble-minded. In other words about 1,000 feeble-minded children are in the school, or are supposed to be there. They should be registered, under direction of the Education Department, in order to be known and located. As for the rest, the adults or those out of school, they should be reported to the Secretary's department. Those coming under the notice of the officers of the law should be similarly tabulated.

Finally, there should be a gradual development of this policy of the care of feeble-minded "in accordance with enlightened public opinion in the province." Dr. MacMurchy is to be complimented upon the persistency with which she has prosecuted her work, the importance of which cannot be too often emphasized.

INTERNATIONAL

International Sanitary Meet Set for November.

The Fifth International Sanitary Conference of American countries will be held at Santiago, Chili, November, 1912. The meeting will be under the auspices of the Chilean Government, with Dr. Alexander de Rio as president. Representatives from every American government are expected to attend, when subjects of interest to every nation, including sanitary legislation, social hygiene and the hygiene of sea, tramway and railroad traffic will be discussed.

The International Association of Medical Museums and Congress of Medicine.

At a meeting held recently in the theatre of the Royal College of Surgeons of England for the purpose of extending the membership in the International Association of Medical Museums, Sir Jonathan Hutchinson occupied the chair, and a representative gathering was present.

Sir William Osler, who convened the meeting, stated that the business of the meeting was to receive information from the secretary, and to arrange for a meeting of the Association to be held in London in conjunction with the International Congress of Medicine in 1913.

The Secretary (Dr. Maude Abbott, of Montreal) informed the meeting of the success which had attended the efforts of

the Association since its formation in 1906 at Washington, D.C., and stated that its object is the development of a department for the exchange of museum specimens and material for research, the elevation of the medical museum as a teaching medium, and the improvement of methods of museum technique by the discussion of methods. The membership had rapidly increased and included representatives in Africa, Australia and South America, as well as in the principal countries of Europe and North America. The latest step had been the organization of local European centres under the control of corresponding members in France, Germany, Holland and Belgium, and it was desirable, said the secretary, that this step should also be taken in England, in view of the proposed meeting in 1913.

The meeting appointed Dr. Thursfield and Dr. Woodwark, of St. Bartholomew's Hospital, and Dr. Kettle, of the Cancer Research Hospital, as correspondents in London and to act as local secretaries. Resolutions were passed arranging (a) that a meeting of the Association be held in London in conjunction with the International Congress of Medicine in 1913, and (b) that the three English Medical Societies — the Pathological Society, the Anatomical Society, and the Royal Society of Medicine — should be made cognizant of the actions of the International Association of Medical Museums.

UNITED STATES

Misbranding in the United States.

"Misbranding" is the new word in United States food inspection, made necessary as a result of the present day practices of selling in packages. There are various forms of misbranding under the terms of pure food and drug laws. There are two classes of food violators, including those that are frankly dishonest, and those that mean well but are "up against" prevailing "trade practices." Many of these "trade

practices" have been abolished as a result of the food laws. The false and misleading clause as applied to misbranding is more of a stumbling block than any other one thing.

In enforcing the law on misbranding it is necessary to analyze and apply knowledge of principles of nutrition. The terms concentrated and predigested are generally falsely applied, and false claims are made in this connection. False claims have been investigated by government chemists of

breakfast foods and invalid foods, cocoa and coffee, of "brain foods" and specially treated foods.

The actual extent and character of food adulteration at the present day amounts mainly to harmless frauds upon the consumer. Gross old fashioned adulteration is not prevalent in foods, but still is in drugs. Artificial color, as now used, is not deleterious, but stands for sophistication almost always. This is much used in flavoring extracts, including lemon and vanilla. Extracts of manana, strawberry, etc., of this type are worthless. Bottled soda containing such flavors are condemned. Imitation liquors are prepared from fusel oil essences. Under the Taft decision (not endorsed by state officials) such may be sold as whiskey. This decision is proving a great thing for the essence manufacturers.

In the matter of food preservatives, the danger is in cumulative effect (especially on the young and feeble), of daily doses gotten from various woods if artificial preservation is allowed to become general. The referee board's decision on benzoate does not decide. Vinegar, spices and salt are preservative, but they also are foods, the last named being a constituent of the body. Borax and benzoate are drugs and nothing else. Chemical preservatives are unnecessary and the absence of their use is the best guarantee of purity and cleanliness in preparation. Conversely, benzoate was found always by the government in the past year in its "rotten ketchup" prosecutions.

A Pure Milk Report from the Department of Agriculture at Washington.

The Department of Agriculture at Washington has made public a report on the use of the tuberculin test to prevent the transmission of disease through meat and milk. Laws of extremely rigid requirements are recommended for enactment by the states and the nation, not only to the end that bovine tuberculosis may be extirpated, but that the public may be protected from other food supplies carrying with them the danger of infection. Naturally it is the little children who are the first victims of infection through milk, and the saving of their lives is worth all the time and money required to make the tuberculin test universal. Under the best conditions, however, the progress in applying

the necessary preventive measures must be slow, and it is important that the public should know the best make-shift measures to employ in the meanwhile.

Director Tonney, of the Municipal Laboratories, of Chicago, recently contributed to the "Journal of the American Medical Association" a valuable discussion of milk and tuberculosis and he classified in the order of their importance the diseases transmitted by milk as follows:—

"First—By far the most deserving of attention is the group of infantile diarrhoeal diseases, which are responsible for about one-third of the death rate among children under two years of age in our large cities. As to the bacteriology of these conditions, we have but little satisfactory knowledge, but the evidence furnished by vital statistics is convincing in establishing the important relation of milk thereto.

"Second—Typhoid fever, the relation of which to milk supplies is now well understood.

"Third—Tuberculosis.

"Fourth—Scarlet fever.

"Fifth—Diphtheria.

"Sixth—A group of miscellaneous affections not particularly important in this country, such as cholera, foot and mouth disease, milk sickness and others."

Sanitary regulations in the production and handling of milk will eradicate these various diseases as the tuberculin test will eradicate tuberculosis, but until these regulations, effectively enforced, are secured the safety of the public lies in pasteurization. Dr. Tonney considers compulsory pasteurization practicable for towns and cities, but pending laws to this end private households may do much to protect the health of the little ones.

The idea has been abandoned by the experts that any extreme degree of heat is necessary to destroy the dangerous bacteria in milk. A temperature of 140 degrees Fahrenheit — which is only a trifle too hot to be borne with one's hand—is all that is necessary under proper conditions. The closed nursing bottle filled with fresh milk should be kept in water of this temperature for forty minutes, and this effectively sterilizes the fluid. Methods of pasteurization practiced by some dairymen are useless; such, for example, as heating milk to a high temperature for a few seconds. This is done to keep the milk sweet until it can reach the customer, and an authority

goes so far as to say that milk treated this way should be poured into the gutter.

If parents can get reasonable assurance that their milk from the dairyman is fresh the forty minutes in heated water under the conditions described will make it safe for the children. So far as known this treatment changes neither the taste nor the chemical composition of the milk and it should go without saying that every enlightened physician will agitate publicly for better milk and in his practice urge strongly the sterilization of the baby's food.

A Consideration of Disease and Germs by the Health Commissioner of Rhode Island.

Recently Dr. Charles V. Chapin, health commissioner of Rhode Island, addressed the Harvard medical students on the subject of disease germs and said some things which many would consider radical. "We have learned," he said, "that germs that cause disease do not grow outside the body, except under unusual conditions. Disease germs may be grown in the laboratory with difficulty. They sometimes grow in milk. Only filth that contains excretions of the body is dangerous. These dangerous germs in filth do not grow; they simply remain in it. Their life is generally short. Disease germs do not always cause disease, even when they are growing in the human body.

Dr. Chapin further explained that the idea that disease can be spread by the germs getting on walls, books, clothing, blankets and such things does not get much credence among well informed medical men. "While this is possible," he says, "it is really very rare."

The real menace in the spread of germs he points out as follows:

"The germs of a good many diseases are all found in the mouth or nose, or both. If you will watch even cultivated people, you will see how industrious they are in spreading their saliva where it will come in contact with other persons, and also putting that of other people into their own mouths. The common drinking cup, pencils used in common, pins placed in the mouth and used while moist by dressmakers, transfers held in the mouths by conductors, and sometimes in the mouths of passengers afterward; people taking

hold of straps in street cars that have been held by people who have had their hands in their mouths — all these and many others are common ways of transmission of disease germs from one person to another. If such things are done by the cleanliest of people, what do you suppose the newly arrived immigrants do that sell us fruit on the street? Don't you think there is a good chance of that material being infected?"

The House Fly and the American Civic Association.

"Scientists," writes Richard B. Watrous, Secretary of the American Civic Association, "have been telling us for ten or twelve years that the fly is more than a nuisance to mankind — that it is a dirty little insect in its breeding places and in its habits, a disgrace to our homes, and, worse than all, a positive menace to health. Last year, the American Civic Association undertook to crystallize the growing sentiment against this household pest into a national crusade for its extermination.

"The crusade against the fly must be one of education, and the newspaper and magazine press is the most valuable agency we have for the dissemination of the expert information gleaned from the bureau of entomology of the United States Department of Agriculture and from the leaders in science and medicine.

"Every one admits that the fly is a nuisance, but only a small part of the population knows just what possibilities for the spread of contagious diseases lie in the feet, wings, and head of the fly. When the people are fully awake to the dangers of the fly, they will demand the most stringent regulation of the care and removal of manure, of the screening of fruits, meats and foodstuffs in and about markets and stores, and for the proper screening of homes, offices, hospitals, and all public structures.

"One year's effort along these educational lines has produced splendid results, as evidenced by the intelligent interest now manifested in many parts of the country for getting rid of the fly. The movement has assumed practical lines with definite ends in view.

"Many cities have already passed ordinances governing the care of stables, the care of market booths, and the proper sealing up and disposition of garbage. And

with the constant prodding of the association's efforts, reinforced by the newspaper and magazine press, thousands of communities will take similar preventive measures.

"In our campaign last year we found the 5 and 10 cent theatre an effective educational instrument. Under the direction of the chairman of our fly fighting committee, Edward Hatch, Jr., of New York, a remarkable motion picture film was prepared, depicting in minute detail the life history and habits of the fly. They cannot be called pleasing pictures, but they are wonderfully effective in arousing the observer to return to his home determined to enlist at once in the army of fly swatters.

"Flies enlarged to the size of Plymouth Rocks are displayed nesting in manure piles, and the evolution of the egg through the larvæ and pupæ stages to the adult fly is revealed in a striking manner. The second chapter relates to the life history of the fly, and by quick stage exhibits the fly nibbling and walking over decaying fish and then by rapid flight conveying that filth to the sugar loaf of the dinner table; again, the fly treading in the slime of a cuspidor and from there passing to the nipple of a baby's nursing bottle and depositing that filth, to be taken shortly thereafter into the baby's system.

"That film was exhibited in thousands of motion picture theatres in all parts of the United States before millions of people. Health departments were quick to realize its value as an educational feature.

"We are using through our individual members and affiliated societies that motion picture film together with a series of stereopticon slides illustrating the fly and suggesting ways and means of getting rid of it.

"Organizations of women are taking deep interest through their committees on civic and public health in the warfare against the fly, and are aiding in a remarkable degree the efforts of state, county and city boards of health."

The Civic Association, in a recent bulletin, pays its respects to the fly in this wise:

"He is a frequenter of offal; the fly lays her eggs in the manure pile or other filth. All the germs — all the imaginable, abominable microbes — fasten themselves on the spongy feet of the fly. He brings them into the house and wipes them off his feet. The fly you see walking over the food you

are about to eat is covered with filth and germs.

"If there is any dirt in your house or about your premises, or those of your neighbors, he has come from it. It is his home. Watch him as he stands on the lump of sugar, industriously wiping his feet. He is wiping off the disease germs; rubbing them on the sugar that you are going to eat, leaving the poison for you to swallow.

"He wipes his feet on the food that you eat, on the faces and on the lips of your sleeping children. This does more to spread typhoid fever and cholera infantum and other internal diseases than any other cause.

"Disease attacks human beings only when they are brought in contact with it. For instance, you cannot get typhoid fever unless you swallow the germ of typhoid, and you do not swallow these germs unless they get on the food you eat or in the liquids you drink, or on the glasses or cups from which you drink.

"Not only does the fly scatter the seeds of disease from his body over your food, but, before your fruit and vegetables are placed on the table they have been subjected to his filthy habits, either in the kitchen or in the stores.

"Intestinal diseases are more frequent whenever and wherever flies are most abundant, and they, and not the summer heat, are the active agents in its spread."

Indiana Chart Displayed at the American Medical Association Meeting in Los Angeles.

Dr. William King, assistant secretary of the Indiana State Board of Health, has struck a unique idea as an illustration for the board's crusade against kissing the baby. Dr. King has had printed what he calls "baby charts," illustrated on the following page, showing pictures of babies, and on the card is an appeal from the youngsters to the elders to refrain from kissing them. Two posters, both similar in character and purpose, were prepared under Dr. King's direction. One will accompany the board's exhibit and will be sent to various parts of the state, and the other was sent to Los Angeles, Cal., as a part of the Indiana exhibit at the meeting of the American Medical Association, June 26 to 30.

INDIANA
STATE BOARD OF HEALTH

PLEASE DO NOT

RISK ME, I DO NOT WANT



YOUR GERMS. THEY ARE HARMFUL.

YOU SHOULD PROTECT ME FROM POSSIBLE

DISEASE AND DEATH



THE EMPIRE AND THE WORLD ABROAD

Manchester and Lemon Peel.

A very great improvement has taken place in the condition of lemon peel imported into Manchester during the past year from Sicily and Italian ports. The Medical Officer of Health, in his annual report to the Port Sanitary Authority, states that in previous years large quantities have been condemned through the unsoundness brought about by the staving in of the pipes and the escape of the brine in which the peel is preserved during transit. The trade in this material goes on as usual, and the fact that the condemnations have dropped from 146 tons in 1909 to four tons in 1910 is very significant of improved methods. It is now a rare event to come across a pipe leaking in any degree. Great credit is due to the shippers for the manner in which they have solved what was proving a very serious difficulty in respect to these shipments.

Recent Cancer Research at Middlesex Hospital.

Some interesting results have lately been obtained in the Cancer Research Laboratories at the Middlesex Hospital, where for several years investigations have been conducted on unique lines. Cancer research at this institution is chiefly concerned with the remarkable fact that human tissues contain varying quantities of radium-like substances, and that there appears to be some connection between the presence of these and the origin of cancer. It is well known that radium and its congeners give off X-rays, and these rays under certain circumstances are known to lead to the production of cancer. Hence it has been suggested at the "Middlesex" that the secret of cancer is possibly to be found in the occasional overcharge of certain tissues with radium-like matter, for under such circumstances surrounding parts would be subjected to the continuous action of tiny doses of X-rays, which, although minute, might in the course of time, be able to exert their cancer-producing effect. It will be remembered that it

is only when human tissues are exposed for a very long time—say, for many hours a day and months at a time—that they are able to bring about such a result.

Up to the present time a number of important facts have been discovered which appear to confirm this view, and it is not improbable that this remarkable and lengthy investigation will eventually throw light on many of the obscure problems which surround the cancer question. Recently the writer had an opportunity of visiting the Cancer Research Department at this hospital, when the director very kindly explained the nature of the latest investigations there for the benefit of the general reader. To put it briefly, although no startling or sensational deductions have yet been made in the laboratories, a vast number of facts are being steadily accumulated there in regard to this connection between radium and cancer, which, no doubt, will some day be made to fit into their proper places in a new theory of the cause of the disease. One important advance that has lately been made at the "Middlesex" is the discovery of certain tiny granules in normal tissue-cells which are not found in cancer-cells, and it is hoped that this discovery may ultimately lead to a valuable method of settling the question as to whether any growth of doubtful appearance is cancerous or not.

The visitor to these cancer laboratories cannot fail to notice that the director and his assistants are distinctly cramped for room at the present time; so much so, that a wide passage has had to be fitted up as an extra research room. Consequently the staff there are looking forward to the time when they will occupy the new laboratories of the Barnato-Joel Cancer Charity, which it is hoped will be ready in a few months' time. A further point of interest is that a trained physicist is now working at the "Middlesex" for the purpose of checking, from the purely scientific point of view, the observations referred to; this gentleman, it may be noted, is at the same time, a "Beit Research Fellow." In conversation, the director of the Cancer Research De-

partment pointed out that his work had been greatly helped by the handsome present of radium which was given to the laboratory some little time ago.

Infant Feeding and the Conference of Women at Brighton.

Hardly any public utterance of the past few months has been more sensible or comes more directly to the practical consideration of some phases of the baby question than the address on "Infant Feeding," by Florence S. Willey, M.D., of London, before the conference of women at Brighton, Eng. "The feeding of infants," she said, "is one of the most important subjects with which the people of a country can concern itself, for it helps determine the full or the incomplete development of the race and hence the position which that country can hold in competition with other nations." The paper was one dealing with proper feeding, the natural and the artificial kinds. There is one kind of food, the speaker noted, that is usually left unconsidered, although of vital importance in the nourishment of the child, viz., oxygen. No arrangement for the feeding of children is complete which does not take into consideration the proper supply of fresh air and sunlight, whereby the system is afforded oxygen and the means of carrying it to the tissues to burn up the waste products. "A moment's consideration," said Dr. Willey, "will remind any one who knows the homes of the poor at first hand, that not one in a hundred children has even approximately the amount of oxygen it needs for full development, and it is further true that unless this air supply is furnished at the same time that the food is improved, much of the effort will have been in vain.

In referring to the natural food, the speaker commented on the fact that among the poorer classes this is commonly furnished, but in spite of it a majority of the children are ill-developed. One reason for this is suggested in the fact that the mother's milk is too often supplemented by solid and indigestible food which cannot nourish the child and which at the same time makes it unable to assimilate the milk that should be its food. Then again, and this is an important matter, the

mother's milk may be of poor quality so that in itself is not sufficient nourishment.

In the first matter much is now being done by health authorities, and the work is worthy of much greater development, to teach the parents that milk itself is a perfect food and that the other things are harmful. Much progress has been made in this kind of education during the past ten years. The danger of poverty in the mother's milk has not attracted very much attention, although in France there are some regulations whereby an impoverished mother may get food free while the child is young. The French are quick in recognizing economic conditions of the kind, and by them it is the child that is considered first. The question of legitimacy is not raised for a moment; it is a child, and the mother must be nurtured. In other countries failure in the child to develop properly is oftentimes laid at the door of the child, when the difficulty lies with the mother. Even the virtue of motherhood is not able to manufacture something out of nothing, although this belief is one that appeals to the poor. It seems to be the cheapest way of filling the new mouth, and the longer it can be cared for in this way by its mother the longer will be postponed the necessity of making an additional expenditure for food. Feeding of mothers is a most important factor to the health conditions of the babies of the poor, and the question of infant feeding in a community cannot be considered as solved until some means is assured that the nursing mothers shall be adequately nourished. When this is accomplished there is secured for the child a fair chance to begin the normal development towards healthy manhood or womanhood.

In her discussion of the question, Dr. Willey did not point out means to this end; this being a social problem to be worked out by each community according to its own conditions; but she did emphasize the fundamental principle that you cannot make bricks without straw, and that there cannot be built blood and bone and brain and muscle without a suitable supply of the elements out of which these structures are made.

The second portion of the address of Dr. Willey related the story more familiar to everyone — the question of the treatment of milk for infant food. Attention is

called by this London authority to the fact that some of the popular notions with reference to pasteurized and sterilized milk do not come true. It has been claimed that boiled milk tends to give the children rickets and scurvy, but in Paris, where this treatment of milk is common, these diseases are rare. Physicians are by no means agreed on the matter of the digestibility of boiled milk, and the current of opinion changes from time to time. Experiments made on animals now seem to prove that when fed on the milk of another species the young thrive as well or even better on boiled milk than on raw or pasteurized. The practical point is that boiling has really no serious disadvantages, it is a simpler method to teach the poor, or anyone else with limited advantages and appliances, and it insures more complete destruction of the pathogenic bacteria.

The general conclusions of Dr. Willey's story are, that the best food for an infant is mother's milk, but this should be adequate in quantity and good in quality and the mother must be suitably nourished. In cases where cow's milk must be used for the young child, it should be boiled or pasteurized, the curd should be reduced in quantity and rendered more digestible by dilution with water, barley water, or lime water. Dried milk preparations or malted milk may be used, but with intelligence and caution. Regularity of feeding is an important though often neglected point, which should be observed, securing, as it does, regular and healthy digestive action and as an aid in forming regular habits.

The British Illuminating Engineering Society and School Lighting.

Two recent meetings of the British Illuminating Engineering Society have been occupied with a discussion of school and college lighting. So far as the elementary day schools are concerned, the thing of chief importance is to ensure a plentiful and properly directed supply of daylight, but the increase of evening classes has made artificial illumination in schools a serious problem. Dr. James Kerr, dealing with the daylight question, arrived at the following conclusions: (1) That the window-lighting on the side of the class-room on the scholars' left should be as ample as possible, and equal at least to one-fifth

of the floor area; (2) that window-lighting facing the children or coming from behind them, so that (in the latter case) they sit in their own shadows, ought no longer to be permitted; (3) that the rapid diminution of light with the distance from the window, which the photometer proves to be appreciable within the length of an office writing table, makes it inadvisable to have class-rooms of greater width than 20 feet. He added that many rooms were capable of great improvement by a judicious wall-covering. Above a height of 5 feet from the floor the color should be very light, and the beams and rafters should also have a coating of white paint. In the subsequent discussion an architect, Mr. Percy Waldram, expressed the view that it was vitally important to have high-angle illumination, and urged that the authorities should be prepared to sacrifice a great deal in order to have top lights in class-rooms. Mr. Bishop Harman, oculist to the London Education Committee, said that the minimum artificial illumination on the school desk of a child had been estimated at 10 metre-candles, an amount not large when compared with ordinary daylight in a fairly lighted room. An ideal distribution of gas pendants or electric lamps for a class-room would be to hang the first lamp—a 16 candle power lamp with 90 degree shade—slightly in front of the dual desk at the extreme left of the first row, and to make the others follow it from that point across the width of the room at distances of not less than 6, nor more than 9 feet. This line of lamps should light the first and second row of desks, a second line being hung in the same relation for the third and fourth rows. Indirect illumination by reflection, although useful in shops, show rooms, and museums, was inadvisable for continuous and detailed work at the desk. Dr. W. J. M. Ettles emphasized the bearing of wrongly directed lighting—more particularly lighting from behind, but also from the right side—upon posture, and, consequently, its ill effect upon the growing spine. The good results of scientific lighting in schools, however, were largely nullified by wretched lighting at home, and he advocated the abolition of home lessons. Two reports were presented, one, by Mr. Leon Gaster, giving the results of tests of the actual conditions of illumination prevailing in various London

elementary schools, and the other, by Mr. J. S. Dow, dealing similarly with colleges and technical institutions. The voluminous data collected by these two investigators related mainly to artificial illumination, especially upon desks and blackboards. On the desks in the class-rooms of four typical elementary schools in London the illumination in foot-candles was found to vary from 1.6 to 5.0, the average being about 2 or 3 foot-candles. Two seemed to be sufficient for ordinary class work. Complaints arose when more delicate tasks, such as shorthand, sewing, or the reading of music, came into consideration. For such labor Mr. Gaster recommended 5 to 10 foot-candles. Blackboard illumination was the least satisfactory feature in the cases taken, varying within wide limits and having apparently no scientific basis at all. Comparative figures for German schools showed a relatively high illumination — never less than 4 foot-candles in the cases given, and sometimes as much as 8 — though the consumption per square foot of floor area was not noticeably different from that usually met with in this country. It was claimed for the high-pressure indirect gas lighting used in Munich that the actual brilliant source of light was well screened from the eye, and that the possibility of shadows being cast by the writing hand was reduced to a minimum. In dealing with colleges and technical institutions Mr. Dow said that the lighting of the lecture theatre in many cases was of the rule-of-thumb order. It was the exception for special provision to be made for lighting the blackboard and diagram sheet, and the illumination on the desks — a less important matter in lecture theatres than in schools — often exceeded that on the lecture table. A requirement generally felt was some form of fixture which would evenly distribute the local illumination of demonstration table and blackboard and at the same time screen the eyes of the audience. Both Mr. Gaster and Mr. Dow emphasized the need for effective shading; no unshielded source should be allowed near the direct line of sight.

Hookworm Studies in Europe.

It is interesting to note a discussion of the hookworm problem recently in one or

two of the Milroy lectures before the Royal College of Physicians of London, England, by A. E. Boycott, M.D., lecturer on Pathology in Guy's Hospital. The diagnosis, the method of detecting the eggs in human wastes, and the conditions both of environment and individual, that determine the spread of the disease in Europe, are all clearly set forth.

In the presence of a well-marked anæmia among those who work underground, the possibility of ankylostoma infection should now be at once suggested. The disease was long unrecognized in Cornwall, it was known to be refractory to certain remedies like iron and arsenic, it had been diagnosed in a variety of ways, and had passed under the eyes of prominent London physicians. Of course, in England, as in the Southern States of America, there needed only the suggestion of what its nature might really be to show the means of diagnosing, since in definite cases the eggs of the worms are to be found in the dejecta of the patients. The eggs are different from those of any other human parasite, and thus are readily to be recognized, the principal confusion existing, it is said, among people who have a vegetable diet, and those who have other widely distributed maladies. In Assam, nearly all the natives are effected, and at the same time other diseases, like malaria, are almost equally well distributed, and in China, there are difficulties in assigning the proportion of disease due to ankylostoma in the general beri-beri infection. In Cornwall miners' phthisis gives symptoms not always readily to be clearly distinguished without special tests.

The more true is this in cases where the infection is slight and no obvious anæmia is present. Blood tests for hemoglobin may suggest the hookworm by the lack of this material, but on the other hand, eggs may be present in cases with the normal of hemoglobin. Superficial examinations for the eggs with the microscope are likely to catch them only by good luck, and in incipient cases the cultivation of the larvæ affords the most accurate diagnosis. A process intermediate between the two includes washing, floating the eggs and collecting them by the centrifuge, the effect of which has been in a large series of examinations the adding half as many to the original number determined to be positive. In the Westphalian coal fields, Bruns, who is in

charge of the laboratory work, stated at an international congress of a year ago, that of men slightly infected, forty per cent. could be detected by the microscope, fifty-five by the washing process and ninety-five by methods of culture.

Dr. Boycott considers next a technical method of diagnosis of early cases through a considerable increase in eosin-ophile leucocytes in the circulating blood, the most marked reaction here coming with young people who have been only recently infected and who have not become anæmic at all. In these cases there is a leucocytosis comparable to that which occurs in trichinosis. With this in mind the lecturer has some difficulty in conforming the results of Dock and Bass, of the United States, with those established in Cornwall and Westphalia, unless, indeed, there may be a difference between the American worm and that of Europe.

The passing of the ankylostoma from host to host is one of the curiosities of biology. There are so many ways in which the transmission of pathogenic parasites is effected directly that there is something unusual in this creature, where the infection in man is dependent upon the environment of the parasite outside his body. Some parasites have no life outside the bodies of their hosts, being given directly from one to another; others oscillate between an animal host and man; others still, like the diphtheria bacilli, have a comparatively brief term of saprophytic life, while still different germs, like those of tetanus, are in the latter condition most of the time. In the hookworm the eggs cannot develop within the body and the young worms cannot become sexual and multiply outside of it. Both conditions are essential to the continuance of the ankylostoma race. There are, moreover, a number of limiting conditions. The eggs cannot hatch without a free supply of oxygen, and therefore cannot mature in the intestine. They will rarely hatch under water, nor if protected from the air to the interior of a manure pile. In a considerable mass of water the eggs will not develop, so that a well-sewered city is reasonably free from infection, although ten days of deprivation of oxygen may be needed to kill the eggs. The larvæ require oxygen, but they thrive well in water. In these stages oxygen is necessary, but when the creatures become adult

they develop most remarkable anærobic capacities.

Moisture is another essential element to the propagation of the hookworm. The eggs or larvæ live a very short time in dry air at ordinary temperatures. The disease never prevails in dry climates, and even in places where it has been abundant, there has been a choice of localities. Its travel from man to man depends upon two factors, the deposit of dejecta upon the ground or in insecure outhouses, and the prevalence of a bare-footed population. In Porto Rico the sugar fields show the difference of locality, since they were not nearly so heavily infected as the banana plantations or those devoted to coffee.

The former are exposed to the sun and are ploughed every year, while the coffee bush is always shaded and the banana grows in groves. In Westphalia there was a serious outbreak in the coal mines following the introduction of a systematic watering of the roadways to prevent dust explosions. The number of cases reported in the years following the beginning of the watering jumped from four per 10,000 miners working to twelve, forty-one and fifty-three. In these German mines the increase in disease led to a systematic examination of all the men and nearly 10 per cent. were then found to be infected. In the South African gold mines, which are dry, about half the natives who come to work are already infected, but the disease does not spread and few if any of the white miners have been affected. In Cornwall the mines vary in wetness with the less number of ankylostomites in the drier ones. Sprinkling is considered necessary as a precaution against explosions, but a system of dry zones has been instituted which has many advantages from the sanitary standpoint.

The only localities in northwestern Europe where the hookworm can gain any hold and make headway are the underground workings. Most mines are warm, and many, hot, and in them there is a suitable environment for the development of the parasite, varied, of course, by many factors into which Dr. Boycott goes quite in detail. Local circumstances influence the conditions. The Levant mine in Cornwall is under the sea, hot and rather badly ventilated, but the seepage of the salt water kills the eggs. In the salt mines of

Hungary the disease is not known, and in France it varies much according to the salinity of the waters.

The lecturer noted the reasons for the spread of the disease among the Cornish miners as due to the filthiness of the men and a number of contributory causes. The tropical temperature and the dampness have been efficient aids to the development of the eggs and larvæ, while the former insufficiency of sanitary accommodations at the surface and the absence of anything of the kind in the mines, have been factors to the distribution of infected matter. On account of the haste always accompanying departure from home the odd corners and out-of-the-way places of the mine were the regular resort, and from them as foci the wastes were tracked into all other places. Much of the travelling of the men was up and down ladders where the hands and clothing came into contact with the filth from the boots. These conditions have been very much improved, the surface now being in general well furnished with good out-houses, the use of which is in a way compulsory. For the Dalcoath mine some years ago pails were introduced, and since that time a provision of such appliances has been made obligatory by law.

Hookworm disease has been characterized to be a malady of a barefooted people, but in England the miners are generally shod. These boots are, however, often leaky, and what is more important, much of the work is done with other portions of the body close to the ground. In the warmer mines the workers wear no upper garment, and such contacts as there may thus be with the soil in combination with the ladders are sufficient to account for the diffusion of the disease.

Preventive Medicine in the Tropics.

The recently published Medical Report for the German Colonies, *Berichte über die deutschen Schutzgebiete für das Jahr 1908-9*, Herausgegeben vom Reichs-Colonialamt, Berlin: Mittler und Sohn, contains a record of the clinical and hygienic work carried out by the several medical staffs. The clinical notes, especially those dealing with the treatment of tropical diseases, are well worthy of perusal by anyone interested in the treatment of any particular disease, but the most interesting portions of

the report are those dealing with preventive medicine in tropical colonies. Realizing that no colony could be prosperous without a plentiful supply of healthy native laborers, the German Government has spent considerable sums of money on the scientific investigation of the epidemic diseases in each colony, and is now systematically applying the knowledge so gained to stamp out these scourges of the native population. Measures are also being taken to protect Europeans living in the colonies. The measures adopted in German East Africa, of which we give a summary, show the lines on which the German Government is working.

The following diseases, which in the past have caused most loss of efficiency or lives, were combated as detailed below:

Smallpox—In recent years only isolated cases of smallpox had occurred in the colony, but in the year covered by this report there were a number of small epidemics, in which, however, only natives were attacked. It is worth noting that the natives in many of the districts try to protect themselves against smallpox by inoculation, carried out as follows: they express the contents of a smallpox pustule, mix this with some native "medicine" to diminish the virulence, and then rub it into a small incision in the left arm or forehead. In some cases only a local pustule at the site of inoculation was produced, but in others, especially children, the practice was followed by a mild attack of smallpox.

The preventive measures adopted by the German authorities were the isolation of persons suffering from smallpox, and, as far as possible, vaccination of the whole population. In the year 1903-4 the number of natives vaccinated was 21,453; the yearly number of vaccinations performed has steadily increased, and in 1908-9 amounted to 117,863. The great increase has been rendered possible by the fact that lymph is now prepared in the colony itself, instead of being entirely derived from Germany, as formerly.

Plague—The endemic foci of plague had been eradicated by 1906, but there still remained the risk of its introduction by trading vessels from India; this actually took place in Zanzibar in 1905, 1907, and 1908. The greatest difficulty was caused by dhows with native crews, as these, in-

stead of making use of the regular harbors, where a trained examination staff exists, were often simply beached at any convenient spot, so that when the tide fell they lay dry on the beach, and infected rats could scamper ashore. Some 20,000 rats were destroyed in the ten principal harbors.

The plague investigation department in Daressalam possesses a fully-equipped laboratory, as well as three mobile plague laboratories, which can be attached to any suspected locality. During the latter part of 1908, 12 cases of plague, 4 of which were of the pneumonic type, occurred in Daressalam; 6 of these were fatal. The last case occurred in January, 1909. Fortunately these cases were detected at an early stage, and, owing to the precautions taken, no epidemic resulted. At the same time rats were found to be infected with plague. Between 600 and 1,000 rats were examined each month from October, 1908, to June, 1909. In October, 1908, the percentage of rats found to be infected was 7.9; this percentage steadily diminished, till February, 1909, when it was only 0.3; after this date no definite infections were detected.

The measures taken to prevent the disease from spreading consisted in the isolation of plague patients, careful burial of the corpses of those dying from plague, disinfection of the dwellings, keeping contacts under observation, destruction of rats. The greatest importance was attached to the last precaution. The work was directed by the medical officer in charge of the laboratory, assisted by a junior medical officer, four medical subordinates, and ten to twenty natives. The town was divided into districts, in each of which in turn rat traps were set and phosphorus rat poison systematically laid out. Once in each two months every surface drain was fumigated with the Clayton apparatus. Two refuse carts were employed for two months to collect and remove all rubbish heaps which could afford a hiding place for the rats. By the end of the year plague had been eliminated from Daressalam.

Malaria—As in every tropical colony, malaria is the principal cause of inefficiency. In German East Africa it is accountable for one-third of the total sickness and one-quarter of all the deaths. The great majority of Europeans live in the

towns of Daressalam and Tanga; hence the anti-malaria campaign was mainly directed to improving the health of those two places.

The antimalaria staff employed in Daressalam consisted of the medical officer in charge of the laboratory, assisted by two sisters, two Genoese assistants, and eight natives. The town was divided into districts and the blood of the native inhabitants in each district was systematically examined once a quarter to detect malaria carriers. In this way over 20,000 blood films were examined during the year. Owing to changes in the population and in the methods employed for examining the blood the results obtained cannot be used as an exact index of the state of malaria in this and in the previous years. It may, however, be stated with some approach to accuracy that, of 100 malaria carriers, 3 have tertian parasites, 10 have quartan, 15 have crescents, and 72 have rings, most of which are probably of the malignant variety. These figures would appear to denote that benign tertian has receded as the result of the general administration of quinine, but that quartan malaria has increased.

All malaria carriers, 4,578 in number, were given a course of quinine. In most of the cases the course lasted three months, and was carried out as follows: On two successive days of each week adults were given 15 grains of quinine in tablets or solution, and made to swallow it in the presence of a European; children received a proportionately smaller dose in a sweet solution. In only four cases was an attack of blackwater fever induced by this treatment; all recovered, and were afterwards put through an acclimatization course of gradually increasing doses of quinine till complete tolerance of the drug became re-established.

The anti-mosquito measures were as follows: In May all drainage ditches were treated with saprol, and with a mixture of 2 parts of saprol to 1 of petroleum. In the case of wells for which petroleum was not suitable a species of cicada was introduced; at the beginning of the year a supply of these insects was obtained and placed in a pond in the experimental gardens; they increased so rapidly that a regular supply for use in wells could be relied on. Water tanks were either filled in or covered with

wire gauze. Cisterns in dwellings were regularly run off and dried. Unfortunately funds did not permit of these measures being as thoroughly carried out as was the distribution of quinine, nor could mosquito brigades be formed. Mosquito-proof shelters have been put up in the verandahs of a number of houses; they are usually constructed of wire gauze, 10 feet by 10 feet by 10 feet. It was not found possible to effect a complete separation of native dwellings from those of Europeans.

The antimalaria campaign report from Tanga lays special stress on the great assistance rendered by the malaria sisters in examining and treating the natives. The blood of 8,239 adults and 2,870 children was examined for malarial parasites; of the adults 1,557 (=16 per cent.) and of the children 670 (=24 per cent.) were found to be carriers. Among 1,635 carriers, malignant tertian parasites were found in 954 cases, benign tertian in 242 cases, quartan in 387, and mixed infections in 52.

The report from the Cameroons mentions that the European officials had been exceptionally free from malaria during the year, and attributes this happy condition to the fact that most of them take quinine regularly (15 grains every fourth day) and live in well-built houses at a distance from the native dwellings. The railway employees suffered most from malaria, but even in their case, thanks to the persistent instruction given on hygiene, the incidence was not great. The public health generally can never be really satisfactory till the native quarter is completely separated from the European dwellings.

Ankylostomiasis—This disease fortunately has not attacked the Europeans, but among the natives working on the plantations of the coast districts it is the cause of much inefficiency and many deaths. The measures adopted with a view to eradicating the disease were as follows: (1) Instruction as to the nature of the disease, its path of infection, and its consequences, was given to Europeans and natives both by lectures and the distribution of pamphlets printed in German and Swahili. (2) Proper latrines were constructed for all natives living in the infected districts. The form usually adopted was a large hole 4 or 5 feet deep with a narrow opening at the top lined with tin to prevent soiling of the ground. (3) Protection of the

water supplies from infection. (The last two measures were carried out by the planters.) (4) The detection of all infected persons by microscopic examination of the faeces; this was carried out by the medical staff. (5) The treatment of all persons harboring the parasite; this was carried out by the medical staff assisted by the overseers of plantations.

In one district 2,433 natives were examined, and 1,502 (66 per cent.) were found to be infected. The treatment carried out in the Tanga district was as follows: First day, in the afternoon, 5 to 7 grains of calomel. Second day, three doses of thymol, each of 30 grains, with an interval of one to two hours between each dose; the drug was crushed and given wrapped in a wafer or cigarette paper. On the third day a purgative was given if required; for this purpose castor oil was preferred as calomel often failed to effect its purpose, and if the dose was increased symptoms of stomatitis were liable to occur. These large doses of thymol sometimes produced an effect similar to alcoholic intoxication, but were never followed by any serious symptoms.

Leprosy.—This disease is found in many districts, but fortunately does not show any tendency to spread and is not likely to have any prejudicial effect on the industrial development of the colony. The former system of collecting all lepers into a few asylums and keeping them strictly isolated there has therefore been abandoned in favor of a scheme of leper villages.

Sleeping Sickness—Most infections appear to have taken place in Uganda or the Congo; strenuous efforts were therefore made to stop all intercourse with these countries. Some of the more intelligent natives were trained to examine suspects for enlarged glands and afforded the commission much assistance, especially in the examination of travellers.

At the end of the report there are a number of photographs of hospitals for natives recently constructed in the various colonies.

The report contains a mass of information on clinical medicine, sanitation, and public health. It speaks volumes for the very thorough and conscientious way in which the medical staffs of the German colonies are carrying out their duties.