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Original Communications.

KILLIAN'S SUBMUCOUS RESECTION OF THE NASAL SEPTUM.*

CHARLES M. STEWART, M.D., M.R.C.S. (ENG.),

Assistant, Ear, Nose and Throat Department Toronto General Hospital. Late Senior
Resident Surgeon, The Throat Hospital, Golden Square, London.

The comparatively new submucous operation, or window resection of the nasal septum, has been so thoroughly discussed for the last three or four years in rhinological circles that very little new remains to be said about it.

Much as we owe to Killian of Frieburg, and Freer of Chicago, for their many ingenious devices to overcome difficulties in the operation, and also for their cleverly designed instrumentarium. To-day we may consider the technique of the operation has nearly reached perfection. In the past, the different varieties of operations for correcting septal deformities were nearly as numerous as the number of operators; but now there is practically one operation, and that the one under discussion. As it is scientific and fairly easy to perform, it will doubtless be the operation for many years to come.

My remarks will be founded on the experience I have derived from operating on fifty-three cases. Of these, thirty-eight were adult males, and twelve adult females; the remaining three in children, their ages being seven, nine, and ten years.

The details of the operation I shall not describe, but will discuss a few points in the technique of the operation, and also indicate the usefulness of the operation for conditions other than nasal obstruction.

* Read before the Section on Eye, Ear, Nose, and Throat of the Canadian Medical Association at Ottawa, June, 1908.

Selection of Cases: The ideal case is an adult male with a marked bow-shaped deflection of the cartilaginous septum.

The reason why this case is so suitable is because the field of operation is well in view, and also because the patient is most likely to stand the operation well, as only a local anæsthetic is used. In patients under puberty one should be very careful not to do an extensive operation on the septum. Better to temporize, and later on, when the child has reached adult life, to do a proper resection operation. I know of a case—a young girl now aged fourteen, who, five years ago, had a very moderate amount of cartilage removed from her septum, and to-day she has quite a marked flattening of the tip of her nose. The present deformity will, no doubt, increase as she grows older. The reason for such deformity is probably, not that the fibrous tissue contracts after healing takes place, but that the fibrous tissue does not develop equally with the growing nose, and so the tip is pulled down, producing a bullet-shaped nose.

Choice of an Anaesthetic.—As the operation is not a painful one, a local anæsthetic is usually all that is required.

For adults, I have been in the habit of using a solution of equal parts of 20 per cent. cocaine hydrochloride and adrenalin chloride (1-1000). Pledgets of absorbent cotton are then soaked in this solution, and then each nostril is carefully packed with the pledgets. The patient is then allowed to lie down for twenty-five minutes, with directions not to swallow any cocaine that may trickle back into the throat. The pledgets of cotton are then removed, and Codrenine (made by Parke, Davis & Co.), thirty minims, is injected under the mucous membrane on each side of the septum. This amount should not all be injected in one place, but in four or five places, and especially beneath an area of mucous membrane opposite the anterior end of the middle turbinate. In the case of children and nervous females, a combination of local and general anæsthesia is required. The reason for giving a local as well as a general anæsthetic, is to lessen the amount of hæmorrhage during the operation, and also to lessen the amount of general anæsthetic required. The general anæsthetic is given after the absorbent cotton is removed from the nose.

Chloroform is the best anæsthetic, and should be given by a Junker's inhaler. Just enough chloroform is given to keep the patient unconscious of her surroundings.

Position of the Patient.—The patient lies with his back on an operating table, the head of which can be raised or lowered

to suit the operator. The patient is at rest, and has none of those fainting attacks that so frequently happen when the patient is in the sitting posture. Neither does the patient suffer the discomfort of holding the head in a fixed rigid position.

One disadvantage of the reclining posture is, that some little blood may pass into the throat. This may be arranged for by allowing the patient to have a towel into which he may expectorate when it is necessary. By this means the patient does not need to lift his head off the table, and, therefore, does not disarrange any of the sterilized towels and instruments that may be on his chest.

Another objection that some operators might advance is, that it is more difficult to get a good view of the floor of the nose, and therefore more difficult to remove the incisive crest, which, by the way, should usually be removed in order to get a good result. However, this objection is soon overcome by a little practice in operating with the patient in the reclining position.

Incision in the Mucous Membrane.—Always operate on the convex side of the septum. A single vertical incision is usually all that is required in a simple case. This incision should be one-quarter inch in front of the point you intend to go through the cartilage. If there is a ridge or spur in addition to the deflected septum, a horizontal incision is required as well; but never make the horizontal incision unless it is really necessary, for it increases the risk of injuring the mucous membrane during the remaining part of the operation, and also lessens the chances of getting good apposition when the operation is finished.

The reason you operate on the convex side is because the mucous membrane on the convex side is more difficult to free. Knowing this, you attack it from the most favorable position. The mucous membrane on the convex side is usually very thin, and has a great tendency to have a patch of rhinitis sicca on the most prominent part of the deflection, especially if the deviation is far forward.

First Cut Through the Cartilage.—There are two methods that I have used with about equal success. Killian's method is to "scratch" a hole in the cartilage with a sharp edged elevator. This is the method that I have usually adopted, but instead of using an elevator I use the point of a small scalpel.

A small slit is soon made in the cartilage by a few gentle strokes of the knife. You realize that the cartilage is gone through by the lessened resistance; then with one of Killian's blunt elevators, gently begin to strip off the mucous membrane on the concave side. Always try and keep under the perichon-

drium, and the task of freeing the mucous membrane is quite easy.

The vertical incision should be made at least one quarter of an inch in front of the point where you intend to go through the cartilage; for if by chance you go through the mucous membrane on the concave side, there will be no permanent perforation in the septum when the two mucous membranes come together.

The other method is to make a small vertical incision far forward on the concave side, and through this incision free the mucous membrane on the concave side around the area where you intend to come through the cartilage from the convex side. One horsehair stitch closes the incision, and within forty-eight hours the mucous membrane on the concave side is perfectly intact.

Frequently there is a dislocation of the triangular cartilage of the septum presenting in one nostril, and a deflection of the septum on the other side further back: in such a case, operate on each condition separately, and through different nostrils.

Resection of the Cartilaginous and Bony Septum.—For freeing the cartilage above and below I prefer Killian's forked plough.

Ballenger's swivel knife has many advocates, but I usually have difficulty with it when I try to change its direction.

The posterior attachment is the most difficult to free. Many instruments have been designed for cutting it, but the method I like best, is to seize the deflected part of the septum with a pair of polypus forceps, after the anterior, superior, and inferior borders have been cut, and by two or three lateral movements, the deflected part of the septum comes out intact.

Frequently, one may take out in the articulated condition the deflected area of the septum, which consists of parts of triangular cartilage of the septum, perpendicular plate of the ethmoid, and anterior extremity of the vomer.

Some operators claim that fractures of the septum may be produced by this method, but I have had no indications that such occurred in my cases.

The incisive crest may readily be removed by Killian's bayonet-shaped gouge and a mallet; then if there are any remaining projections of cartilage or bone which require to be removed, this can easily be done with a Jansen-Middleton forcep.

There are some conditions where the submucous operation may be done with good results, other than to relieve nasal obstruction. A few of these conditions I shall briefly mention.

Atrophic Rhinitis.—Hopman thinks that there is a definite

type of skull in Atrophic Rhinitis. Meisser found that in cases of Ozena, 97½ per cent. of them had heads of the brachycephalic type. At any rate, it is a well known fact, that a congenitally wide nose is one of the common predisposing causes of Ozena. From these facts, Parker reasoned that unilateral atrophic rhinitis with deflected septum should be cured by correcting the septal deformity. He operated on a series of such cases by the submucous method, and found that the ozena in these cases was cured, or if not cured, greatly relieved. I have had the opportunity of operating on three such cases. Two were completely cured at the end of three months, and the third was improving, although not cured, at the end of four months.

Rhinitis Sicca with Epistaxis.—A condition of rhinitis sicca frequently develops on the prominence of a slightly deflected septum, especially if the deflection is far forward.

In this region, the inspiratory air current first impinges on this mucous membrane, and the ciliated mucous membrane becomes gradually changed to the squamous type. Then dust and foreign bodies begin to lodge on this area, and soon crusts form. Every time a crust is removed the nose bleeds, and shortly, if the case is neglected, a perforation in the septum results.

Recently I have operated on two cases of severe epistaxis. In both cases, there was a slightly deflected septum, and on the most prominent part was a patch of rhinitis sicca. It was from this area that the bleeding occurred. In each case, a limited submucous resection was done, and the epistaxis has been completely cured. No doubt the epistaxis might have been temporarily cured by the use of the galvanocautery, but the cause of the condition would still remain.

Deafness.—Occasionally unilateral deafness is noted in patients with a markedly deflected septum. Possibly, the aurist wishes to pass an Eustachian catheter, but finds it impossible to do so on account of the nasal deformity. By correcting the septal deformity, it gives an opportunity for catheterization, but even if the deflected septum is corrected and no catheter used, a marked improvement in hearing follows.

The air currents are greatly interfered with in the obstructed nostril, and so the mucous membrane in the region of the Eustachian tube on this side is wet and sodden. Partial or complete stenosis of the tube follows, and deafness is the result. By correcting the deformity of the septum, the air currents are able to take their natural course, the diseased mucous membrane in the nose-pharynx becomes healthy, and in the course of a few months the hearing is considerably improved.

Narrow Narics.—The septum may not be deflected, but is irregular and very much thickened. The cartilage of the septum may be nearly one quarter of an inch in thickness, and when this is covered by perichondrium and mucous membrane, the total thickness of the septum may reach nearly two-fifths of an inch. This in a narrow nose is considerable.

When the patient has a slight cold in the head, the turbinates become swollen, and soon are in contact with the septum. A submucous resection of the septum will increase the width of each nostril by one-eighth of an inch, and this is considerable in such a narrow space. Of course, it may be said, why not cauterize the turbinates, or even remove the anterior end of the inferior turbinate? The importance of saving the normal mucous membrane in the nose is so great, that we should sacrifice time and labor to accomplish it.

142 Carlton Street, Toronto.

THE USE OF ANTI-DIPHTHERITIC SERUM AS A PROPHYLACTIC AGENT AT THE HOSPITAL FOR SICK CHILDREN.*

BY WM. GOLDIE, M.D., TORONTO.

Physician in charge of infectious diseases at the Hospital for Sick Children, Toronto.

Diphtheria has, by reason of the use of the anti-diphtheritic serum, been removed from the position of one of the most dreaded of diseases, no longer giving rise to the extreme horror and panic in the family or in the institution. Yet its incidence has not been reduced at all, so that the quarantine measures must remain as strict as ever, and the inconvenience and the loss occasioned by these measures be felt all the more acutely, now that the dread has been removed. Nowhere does the quarantine interfere with the normal routine so much or with such disastrous results as in children's hospitals, and the object of this paper is to bring up to date the results obtained in the Hospital for Sick Children by the use of the anti-diphtheritic serum as a prophylactic, in the endeavor to overcome the incidence of the disease and the paralyzing effect of the quarantine.

To understand more fully the conditions existing in children's hospitals and the limits of the use of the serum as a prophylactic in other institutions, it will be well to briefly recall the method of transference and the main points in regard to the incidence of the bac. diphtheria.

Bac. diphtheria, like all similar organisms, must be conveyed from person to person under the laws governing the bodily movement of any solid particles of matter; to remove it from one site to another there must be the application of force. The common site in man of the growth and development of this bacillus being in the upper air passages, the force applied must be either that of the outflowing air current or the intervention of some external agent.

The ordinary expiration is not forcible enough to expel any particles, but forcible talking, laughing, crying, coughing or spitting detach many bacilli-laden droplets and particles and distribute these to all parts of a room; hence it will depend upon the number of bacilli expelled and the secondary forces which keep them circulating in the air whether they will gain access, like any other solid particles, to the air passages of a second

* Read before Ontario Medical Association.

individual, and, having found lodgment in this apparently favorable site, it will depend upon their fecundity and the suitable character of the surroundings whether they will grow, leaving out of consideration altogether the conditions under which they may produce toxic symptoms in the individual.

That transference does take place in this way has time and again been proved by the examination of the droplets expelled and by the exposure of susceptible animals to the expelled air currents; and that it must be the main method of transference is demonstrated by the unflinching spread of the infection in the well-lighted wards of the hospitals, where the dust has been vigorously kept down by moist floors and wet dusting.

To this direct air contamination add the indirect air contamination by the dried excreta transformed into dust (both of which may be going on for great lengths of time because of the long life of the bacilli in the air passages), then it must follow that the percentage of people infected with bac. diphtheria must increase as association increases, from a low percentage of carriers in the general population to a much higher among institution inhabitants.

If the carrier be a case of clinical diphtheria, whose mucous membranes are irritated with all the consequent acts of coughing, etc., the bacilli expelled will be greater in number, and the contacts of such a carrier will show a much higher percentage of carriers infected, depending, as above, on the association.

These points are fully borne out by the experience of all, and I will only add examples of the prevalence of carriers as given by various investigators.

| | |
|---|---------------|
| General population | .29% to .43% |
| School children (not in time of epidemic).... | 1. % to 2.5 % |
| Mill operators | 1.5% |
| Mass. Gen. Hospital | 2.6% |
| Toronto Gen. Hospital | 4.9% |

(After recurrence of several cases.)

| | |
|--|------------------|
| School children (during an epidemic) | 10.4 % to 11. % |
| Hospital for Sick Children..... | 11.3 % to 13. % |
| *General contacts | 11.7 % to 11.9 % |
| *School children contacts..... | 34.7% |
| *Family contacts | 50. % to 60. % |

* Contacts are those who have come in contact with Clinical cases of Diphtheria for several hours or more.

NOTE.—The virulent forms found in the above range from 17% in case of the general population, to 3 % in the case of general contacts.

From these examples, the conclusion can be drawn that the incidence of carriers increases in almost direct relation to the association and the age of the individual, and the introduction of fresh strains of the diphtheria bacillus.

In the Hospital for Sick Children all these favorable circumstances are frequently combined, for here there is the close association of 150 or more children of the susceptible age, with an average stay of about 37 days, and hence the likelihood of the frequent introduction of fresh strains of the diphtheria bacillus, while the persistent carriers are a constant source of danger to the newcomers. The fact that we are here dealing with ailing children seems to be of no importance other than that the prevalence of crying and coughing aids in the distribution of the infection.

Providing that the prophylactic use of the serum has no effect in clearing up carriers, and I have known carriers to remain unclean for five months, in spite of the free use of the serum, then we would expect the percentage of carriers found in the hospital to take the place in the above list where it appears, that is, as great as that of general contacts and greater than that of school children during an epidemic.

In the latter case the individuals are at the same susceptible age, but the association is not as great, and the individual population remains constant, hence the introduction of fresh strains of the bacillus is not as frequent, nor the transference as common; but once introduce virulent forms with the coryza symptoms, the percentage of carriers rises rapidly, even above that of a hospital where all are being immunized. In the case of a school the children can be separated in their homes, and only the carriers and their families given antitoxic serum, but in the hospital such separation is impossible, and owing to the quarantine many urgent cases would have to be refused admittance.

Previous to the use of the antitoxic serum as a prophylactic, clinical diphtheria was endemic among the children alone; 32 to 48 cases would occur in the course of the year among a yearly population of about 780.

Such a high rate of incidence of clinical cases throughout the year, with the crippling of the hospital work, led to the use of the serum as a prophylactic, and at first it was used in 500 unit doses every three weeks, but this was soon changed to 1,000 units every three weeks. Immediately the clinical cases fell to an average of 7 or 8 cases a year, in all of which the development of clinical signs and symptoms were explainable as occurring near the end of the three weeks' period, or within twenty hours

of the injection of the serum, or, where through neglect or intention the serum had not been administered. So remarkable a fall in the number of the cases was only equalled by the mildness of the attacks in those cases which had received any serum recently, and this was so marked that the members of the house staff came to look upon diphtheria as a trifling disease, until brought to an appreciation of the necessity for precautionary measures by the occasional severe case that would come to the outdoor clinic.

That the 7 or 8 cases which did occur were preventible was apparent, and as the apparent cause was the failure of the dosage to immunize for three weeks, the interval was shortened to two weeks and the dosage to 500 or 1,000 units, according to the size of the child.

During the four years since this change was instituted there have only been 19 cases of clinical diphtheria among the children, an average of about five a year. Of these 19 cases, all but five are explainable by the interval still being too long in special cases or that the serum was withheld for some reason. Examples of these were the following cases:

Child E. B., aged 8 years; developed a severe bronchitis and was considered so ill that the routine injection was not given: death on fourth day: post-mortem and bacteriological examination showed the bronchitis to be due to bac. diphtheria without membrane.

Child C. D., aged 7: no antitoxin administered for three weeks: faucial diphtheria developed: 10,000 units: recovery.

Child E. S., aged 8; routine injection—500 units—17 hours after reddening of throat with slight membrane: 10,000 units: recovery.

The five cases unexplainable by the length of the interval or the withholding of the routine dosage were laryngeal cases, developing in the active stage of measles. Four of these died within twelve hours of the first ascertainable symptom, in spite of large single and repeated injections of serum. The fifth case, seen within one and a half hours of the onset of symptoms, was given 18,000 units extravenously and 32,000 subcutaneously, recovering, only to die of pneumonia five days later.

The failure to recognize this severe and overwhelming toxæmia in the earliest stages as due to the diphtheria bacillus was owing to the fact that no membrane was formed, so that if it had not been for the findings microscopic and bacteriological they would have been placed in the class of laryngitis with inspiratory pneumonia. These cases had received the routine injection of

serum, and it would seem that measles does away with all resistance to the diphtheria bacillus, rendering useless the small amount given in the ordinary prophylaxis, and this is in agreement with the findings of many other observers.

Since the occurrence of these cases it has become the routine to give 2,000 units to every case of measles when first seen, and if the anginous symptoms keep up to repeat the injection on the fourth day. Following this change no diphtheritic poisoning has occurred, though many of the measles patients showed free-growing diphtheria bacilli in cultures from the throat.

The only exception to the uniform results recorded was this year (1907-1908), when one of the services, consisting of 35 to 40 beds, discontinued the use of the serum for three and a half months, with a consequent development of 29 cases of nasal carriers. Of these 29 carriers, 19 belonged to that service and 10 to other services whose patients were associated in the same wards. Among the 29 carriers, 13 showed clinical signs of prolonged temperature, increasing pallor, weakness, and pulse rate; 10 belonged to the unimmunized service, and 3 to the immunized services.

As soon as the routine administration was resumed the clinical cases ceased to arise, though many of individual cases and carriers remained as carriers for many weeks.

In contrast to the marked reduction in clinical cases due to the general administration of the serum, the number of carriers remained practically the same, never for any one set of swabs going below 11.3%, and I have never seen any carrier clear up because of the administration of serum in large or repeated doses, locally or subcutaneously. The clearance being rather a matter of time, with more relation to the local condition of the nose and throat than to the state of general health. I have not seen that any of the applications in common use had any effect in getting rid of the bacteria; rather is the opposite effect suggested by our results.

Up until this winter there had never appeared any serious or alarming symptoms among the 4,084 children to whom the serum had been administered from once to thirty times during their stay in the hospital. There have occurred since then two cases in whom death seemed imminent shortly after the administration of serum; one was a case who had had repeated injections, and in the other the symptoms followed immediately upon the initial injection of serum into the thigh; a dusky hue was noticed widely around the site of injection, rapidly becoming swollen and red. Within ten minutes the patient became wildly excited,

with purposeless struggling, the pulse becoming more rapid, then irregular; erythematous patches appeared on the legs, turning to a scarlatiniform rash as it spread on the trunk: the face, chest and hands became evenly suffused, the color at first red, then more and more bluish as the pulse became more irregular and weak, and finally imperceptible in the radials, the evidence of urticarial swelling of the bronchial mucous membranes became more marked and the patient sank into a stupor. Atropine and whiskey were freely administered, and within five minutes the pulse was again to be felt in the radials. In twenty-four hours the patient's condition was good, except for the great swelling of the leg, which was covered with erythematous blotches.

The most frequent of the minor ill-effects following the administration of the antitoxic serum is the rash urticarial or erythematous, which appears in one individual out of eighteen. The interval between the injection and the occurrence of the rash may vary from a few minutes up to fourteen days, the greater number of rashes appearing after the fifth day if one leaves out of account the local disturbances at the site of injection. In certain individuals the rash may remain for three days, but the usual duration is 12 to 24 hours. There are cases on whom the rash appears day after day for as long as eight days.

Those patients who have had the rash appear once are very likely to have it occur after some subsequent injection, and a few will have it appear after every injection.

In these susceptible individuals calcium lactate does not seem to have any effect in preventing the appearance of a rash.

Certain serums produce a greater number of rashes, always in much greater proportion among those who have already had rashes. And I have not been able to satisfy myself that the rash production in the susceptible individuals was lessened by the use of the antitoxic serums prepared by precipitation.

Of the other ill-effects, I have not been able to satisfy myself that there is a temperature directly developed by the serum or at the time of the appearance of the rash, where there has been a temperature, it has usually been found that the injection had been made into a dense tissue or made too rapidly, with much subsequent pain and discomfort.

Arthralgia has been uncommon, except after large curative doses, but when it occurs it persists for many days.

Abscess is uncommon, usually occurring when the serum has been injected too rapidly and forcibly in case of a patient suffer-

ing from a septic process, with well-marked signs of exhaustion and general infection. Such a patient may develop an abscess with each injection, no matter how carefully it may be given, and the bacterium found in the pus is that producing the septic process.

The site of the injection should be into the loose subcutaneous tissue, by preference into that above and behind the great trochanter or into that over the lower quadrants of the anterior abdominal wall. Slight local reaction, in the form of swelling and redness, may occur in any case, but when the firmer tissues are the site of the injection the more severe is the local reaction, swelling and pain great, with a sense of general discomfort, and maybe a rise in temperature.

In contrast with the falling incidence of diphtheria among the children, there has been no change in the percentage among the nursing and house staffs, to whom no immunizing injections have ever been given. Every year there would arise five or six cases among a staff whose average number —, of whom — would be replaced each year. It is in connection with the treatment of these cases that there is a great saving to the patient and to the hospital by the use of what may seem very large initial injections of the serum.

All cases occurring among the staffs were seen within 48 hours, and most of them within 24 hours of the onset of symptoms. At first it was the practice to administer 3,000 to 5,000 units at intervals of 8 hours, until membrane showed signs of improvement. This entailed a stay in bed of 7 to 12 days and a further period of several weeks on holidays to regain strength. The loss to and the crippling of the hospital was almost as great as when cases developed in the wards, and the injury to the patient was more than one would have expected among cases secured early in the first day. All of the nursing and house staffs were appealed to and instructed to report at once any evidence of illness or sore throat, and subsequent cases were seen earlier. These were given 15,000 to 22,000 units in one injection, and in no case were any diphtheria poisoning symptoms existent by the end of 24 hours from the time of injection, nor did the heart at any time show any sign of injury, even when on the fourth or fifth day from the onset the nurses went on duty in the infectious disease wards. The economic value of this method is obvious, and the gain to the patient is so great that the practice of giving large curative injections of the serum to the children has resulted in cutting short the convalescent period by many days.

The above results both in the curative and immunizing dos-

ages would justify the continuance of serum administration after the above fashion, if for no other reason than that it has allowed the hospital to keep its doors open and conduct its work. But, in view of the great number of reported cases of "serum disease" and anaphlanis, it would be well to watch the later methods of serum production and secure a purer antitoxin, or resort to the only other method of producing immunity, that is, by the use of diphtheria toxin or diphtheria vaccine, to produce a more lasting immunity.

A LAYMAN'S VIEW OF HOSPITAL WORK.*

BY J. ROSS ROBERTSON,

Chairman of the Board of Trustees of the Hospital for Sick Children, Toronto.

During the past thirty years I have every year visited Great Britain and the continent of Europe, and nearly every State of the American Union. During these visits, interested as I am in hospital work in this city of my birth, I naturally felt interested in this work in other cities. My visits were not inspired by curiosity. My idea was to gather knowledge, so that the particular class of work which I had at heart might be benefited. When I tell you that these visits covered not only close inspection of the work, but heart-to-heart talks with the superintendents, lady superintendents and matrons of all the principal hospitals for adults in large cities of Europe, Great Britain and Ireland and the United States, and in every hospital for sick children in the same area, I think you will admit that my mileage ought to have been given me an experience in the line of information-getting that should have availed to advantage the institution that I am connected with, and so it did. I, of course, took it for granted that in all these great hospitals good work was being done in the surgical and medical departments by the skilled men who were in charge. Of surgery and medicine I know nothing, and this paper concerns only the business end of the work that is in your care and mine.

It struck me during my tours that in Great Britain, Ireland and the United States and Canada the layman plays a most important part. The largest and best hospitals in Great Britain owe their foundation and construction to the energy, enterprise and philanthropy of laymen—investments that total up millions and millions of pounds in sterling money, either left by bequest or paid during the lifetime for palatial edifices to shelter the sick and afflicted—all from the pockets of laymen.

Hospitals may be dependent for support in part from governments and from municipalities, or from voluntary contributions, but in the final analysis the layman pays the bill, and, be it said, as a general rule he does it ungrudgingly. Hospital construction and reconstruction is going on all over the British Empire, its colonies and in the United States of America. These buildings are constructed largely by the contributions of laymen.

Read at the Annual Meeting of the American Hospital Association, Toronto, September 30th, 1918.

Hospitals have to be maintained. It is a comparatively easy matter to build a hospital. The maintenance is a horse of another color. Appeals have to be made to the public. The Provincial Governments in Canada do their share, and pay a per head per day rate, and so do some of the corporations that govern cities, but the deficits—and deficits are inevitable—have to be made up by the layman. There are various phases of the hospital problem that appeal directly to laymen, and it is a pleasure to see the faithful work of business men who, even if they are a bit short in the line of this world's goods, are long in the line of giving attention to hospital work.

The management of hospitals, and how to make such management effective, is a problem that has in a way yet to be solved. My information and my experience point in the direction of small boards of management. Given a first-class superintendent, man or woman, to look after the work in the surgical and medical sides; a lady superintendent for the training school for nurses—if there be one—and a manager to cover the business end—all these under a small board of four or five trustees who are interested in the work, should suffice for the management of any hospital on this continent.

Some people think that the business end of a hospital's work should be managed by a business man who is not a medical man, and I share this opinion; but I am at the same time bound to admit that I have the pleasure of knowing quite a number of medical men who manage both the medical and the business end in hospitals in the United States and Britain, and their work in management cannot be excelled. At the same time one can point to any number of cases where hospitals have suffered materially from the combination.

Hospitals with large boards of management, made up of representatives of municipalities and institutions either directly or indirectly affiliated in the hospital's work, do not seem to pursue the even tenor of the way that should be followed by organizations of that kind. The composition of boards of management is open to criticism. Citizens are appointed who have little or no interest in hospital work. They put in an appearance during the primal stages of their careers on the board, after which their interest wanes, and they are never in evidence unless some friend wants a position, and then they are sure to be on hand to cast their votes.

The fact is that they obtain positions on the board because they are prominent citizens, prominent, perhaps, because they have more figures at the balance of their bank account than or-

dinary people, or because of their political affiliations they like to see their names in cold type in hospital literature, so that they may be known to the public as prize medal philanthropists.

Some of them, as an American friend of mine has said, rarely see the inside of the hospital with which they are connected, save and except when some public function occurs, and at which they are, of course, always in evidence.

On the other hand, there are trustees who are always on the job. Some have sense enough to act as trustees should act, and if they have to criticize the work they do so to those who are in official charge. Other trustees, however, undertake to regulate everybody in the institution, from the general superintendent down to the genial and hard-working domestic who struggles with the scrub brush on the floor of the outdoor department. The latter variety of trustee fortunately does not often get into the forefront, but when he does get in his deadly work he creates friction that leads occasionally to the resignation of the entire staff, and leaves the institution in such a chaotic state that recuperation and convalescence absorb months, and sometimes years, of time. Cases on both sides of the Atlantic—a noted case in England some time ago—are proof of the truth of my statements.

There should be no interference by a lay board with the work of the medical staff, and likewise there should be no interference by the medical staff with the business management of the hospital. There is a proper way of adjusting difficulties, and so avoiding friction. Whatever is wrong can readily be righted when the entire facts are laid before the Board or Committee of Management. Cases can be cited in Great Britain and on this continent where this clashing of interests has led to disaster. Small boards and competent subordinates in management have worked out best in hospital work. There is no use for hospital managers being blown about by every wind of doctrine. Every special theorist must not be allowed to have his finger in the pie, exploiting his pet fads at the expense of the hospital.

The desirability of reducing the number of the medical and surgical services in hospitals prevails to-day to a greater extent than ever before. It promises to result in the concentration of responsibility and unity of effort. Of course, it is a difficult matter in some hospitals to reach that point, but the day may come when a single service in each department with a head and competent subordinates may be attained. The German hospitals that I have visited follow closely on these lines, and so do some in Great Britain, and a few on our side of the Atlantic.

Distinguished professional men, such as Dr. Mayo, of Rochester, and Ochsner, of Chicago, advocate this principle, and it is their opinion as a result of their experience in examining the systems and workings of the principal hospitals of the world.

Boards of management composed of laymen favor to-day, more than ever, the adoption of this principle to a greater or less extent. The institution with which I am connected introduced this system in Canada, and it has been adopted with success in other hospitals of the Dominion.

Years ago the handling of the public was a problem that puzzled hospital management. But tact and good judgment exercised by superintendents and managers have largely eliminated the difficulties presented in the olden time. The public to-day are less critical and more reasonable in their views of hospital treatment. Scores who years ago would shy at entering the ward of a hospital as patients to-day are only too clamorous for it. The dread of a hospital and the discredit attached to being a hospital inmate have entirely disappeared.

A small percentage of the public are under the impression that when they enter the pay ward of a hospital the fee for lodging and maintenance covers the charge for treatment. They apparently forget that the physicians and surgeons give their services free to those who cannot afford to pay—so that those who can pay must pay. The hospital is not a pauperizing institution.

The outdoor department of a hospital is always more or less a source of trouble, in that care has to be exercised in regard to those who should receive free treatment. My experience is, after years of careful watching, that if proper means are adopted nearly all cases of imposition can be detected. I have had each year for some years past a personal investigation made into probably a thousand cases of outdoor applicants, where the inspector has visited the homes and the families concerned, and he found that not more than five per cent. could afford to pay even a trifle, and that the percentage of imposition was infinitesimal.

Let me say that we safeguard ourselves with a signed certificate from a clergyman or well-known citizen before giving relief on the second application. I found while in England last month that there is a great movement to try and establish some intermediary department as between the hospitals and their outdoor departments, the idea being that the hospitals would only take those duly certified by the dispensary of the district.

A hospital for the sick poor should not have private or semi-private wards unless there is a distinct separation between the

funds subscribed for philanthropic objects by the public and the more or less revenue-producing wards of the hospital. The want of money for maintenance naturally drives hospital managers to the installation of private and semi-private wards as expedients for raising funds to carry on the work. I suppose that till the happy time arrives when hospitals will have ample balances on the credit side of their bank account, the installation of private and semi-private wards will continue.

The great hospitals of London, such as St. Bartholomew's, Guy's, St. Thomas, East London and University College, have no private wards. St. Thomas has, however, a private building for private cases entirely separate and distinct from its general work. Of course, there are in London many nursing homes, as they are called, that supply the places of the private wards in hospital work.

Annual reports of public institutions may be included in the lists of latest publications, but notwithstanding the interesting topics therein discussed, hospital literature, be it said with regret, is not sought after by those who look for popular reading at the counters of circulating libraries. The day has not arrived—it may be on the way—perhaps it has a stop-over ticket—when popular literature will have as one of its competitors the hospital report.

It struck me ten years ago that the driest and most uninteresting reading was our annual report. The subject matter was all right, but it did not seem to be placed before the public in proper form. So I commenced to illustrate our reports. I got away from the stereotyped official expressions that such reports are generally loaded up with, and, instead of the report reading like "the minutes of the previous meeting," I told all about our work in story form.

I sub-headed the reports according to subjects. I used a good calendered paper, and called to my aid the photographer and the engraver. I gave in half-tones the actual daily life in the wards. I exemplified our work in the orthopedic branch by ordering that every case of clubbed feet, in fact every surgical case that could be photographed, should be so done. I photographed every case the day it entered and the day it was discharged. I half-toned these photos, one of which showed the crippled boy when he was admitted to the hospital, and another when his deformity was corrected. The publication of these photos of "Before and After" the operation were admirable exemplifications of our work—a first-class object lesson that brought coin to our coffers, for the public realized just the great amount of good we were

doing. I followed this "Before and After" idea up in cases of bow legs and knock knees, and also in every case of hare-lip that had successful results.

The daily life in our wards—the nurses moving about from bed to bed—the children at their games—all had to answer the call of the camera. All material was made available for illustration, even the taking of a swab and its progress through the culture tube, the incubator, on the slide, with the stain and under the micro; a plaster jacket in all its stages; the search for the nickel in the gullet of some youngster who swallowed the coin instead of buying the candy; a needle from its point of entry, and its travels till located by the X-ray—all these are brought to the public eye through our fifty-six page report. We publish 12,000 of these, one for every donor: and we also issue a booklet of 24 pages with our larger report, condensed in paragraph form, and interspersed with small half-tones. Of these we send out 225,000 copies.

We advertise, and, what is more, pay for advertisements in the Toronto daily papers, and all this literature we send out just before Christmas is at a cost for postage of about \$2,500, and when we count our cash about the first of March we generally average about \$30,000 as the result of our appeal. Our example has been followed to a limited extent by some of the Irish hospitals for sick children. I'll send all of you a copy of our next annual report.

During the past thirty years hundreds of thousands of dollars have been received from voluntary contributions by the Hospital for Sick Children. A general impression prevails that the money for the support of the hospital comes from the pockets of the wealthy. Now, an intimate knowledge of the sources that sustain our work shows that we receive the dollars and dimes of the many rather than the donations of the few.

Of course there are noble and notable exceptions—one at least in our history aided us with a gift of \$10,000, the largest the hospital ever received from one individual benefactor in his lifetime. The experience of one other Canadian city differs, and your experience in American cities may differ from ours. Our experience is that the millionaire and his money are not soon parted, when the hospital has no other security to offer than that inventoried in the words of Holy Writ: "He that giveth to the poor lendeth to the Lord."

In all hospitals where there are training schools for nurses the management of these schools is, as you all know, in the charge of a lady superintendent. It has often occurred to me that these

women who hold such responsible positions do not get, in some cases, the cheerful consideration they should get from medical superintendents and boards of trustees.

In fact, I know of cases in parts of this continent where, to use a familiar expression, the lady superintendent has "a hard time." I have had the pleasure of meeting the lady superintendents of the continent in the annual meetings of their Association, and in very many of the hospitals in which they are engaged in their work of training and caring for the nurses of their schools. My opinion is that no class of women engaged in hospital work deserve more kindly treatment and encouragement than they do. The pathway of their work is not one strewn with roses, and should be made as pleasant as possible by kind words and attention and consideration to the suggestions they have to make to better the condition of their pupils and to improve the routine of the daily labor that falls to their lot.

The housing of nurses is a feature that deserves far more attention than it gets to-day from hospital managers all over the world. My visits to hospitals during the past thirty years have shown me that in scores and scores of institutions on both sides of the Atlantic the care of the nurse is only a minor consideration. True, in some of our large cities of this continent and of Great Britain conditions have materially improved, and there are perhaps fifteen or twenty residences that are models in comfort and sanitary equipment. These young women deserve the best consideration. They come to us in good health, and should leave us on graduation in undiminished health. I have seen residences, or rather accommodation for nurses, in some parts of the United States, yes, in Great Britain, the condition of which is a serious reflection upon boards of trustees and managers.

A hospital is a place where health should be preserved as well as being restored. There should not be one principle for the wards and another for the nurses' residence. Most nurses don't get sufficient rest. Their labor is too continuous and severe. Be it said that the hands of many lady superintendents of training schools are tied in their effort to get proper accommodation for the nurses. The appeal of the superintendent for better accommodation is made to the trustees. The appeal gets to their board room table, and either gets into the file box or into the waste paper basket.

The selection of resident physicians—I mean the fourth and fifth year youngsters who have to put in their full year at hospital work before they can have "M.D." upon their door plate—is very important. It is a difficult matter to pick out of thirty

or forty applicants just the four or five that will fill the position satisfactorily. It is comparatively easy to find their status during their school life, but because they are good men—yes, even honor men—it does not follow that they are suitable for resident positions in hospitals. The feelings of not only medical superintendents, but lady superintendents, should be consulted. Table manners and general deportment may not be on the curriculum of medical colleges, but they are not a negligible quality in hospital life and administration. A careful scrutiny into personal habits and conduct should be exercised before the residents are introduced into hospital life.

When they are selected they should have proper accommodation, and made comfortable for their work. Their duties are onerous, and in food and lodging they should be under the best conditions. Every man should have a separate room—if possible, a bedroom, sitting room and bathroom. The want of space in older hospitals makes it difficult to effectively carry out the accommodation suggested. The perfection of comfort for resident physicians is to be found in the Western Infirmary in Glasgow, where a small bedroom, with a small sitting room and bathroom attached, is provided for each resident. It may be difficult to provide this accommodation in older hospitals, but in those now being constructed on this continent it would be a simple matter, and not so very expensive.

May I, in conclusion, express the hope that my good intentions and earnestness will not lead any of you ladies or gentlemen to assume that I regard myself as an oracle in hospital management. It was the custom in my early days as a printer fifty years ago to ask the "devil" at the close of the first day of apprenticeship one question, and that question was: "Are you sorry you learned the printing business?" It is just as impossible for a grown man to learn the hospital business in the years I have given to the work as it was for the boy to learn to master the secrets of "the art preservative" on the first day of his apprenticeship. I have not learned the hospital business, but I am not sorry I tried to learn the mysteries of your work and mine. We are all of us soldiers, not conscripts, but volunteers in the armies that keep step in the great march of mercy.

I am glad to be with you in this great council of war, where we meet as Americans and Britishers, each separated in allegiance to the ensign of our affection, but united in loyalty to the humanity which is above all nations.

HOSPITAL CONSTRUCTION.

BY JOHN N. E. BROWN, M.D.,
Superintendent Toronto General Hospital.

To the Members of the American Hospital Association:

Mr. President. Ladies and Gentlemen.—The imperfections of this paper will be shared by yourselves; for, like Tom Sawyer's friends, you have helped me to whitewash the fence. Realizing my limited knowledge on hospital construction and the little time I have had to study such a comprehensive subject, recourse was had to yourselves for information. You have carried the bricks up the ladder; I have tried merely to lay them in place. I must thank those who replied very cordially.

SUMMARY OF QUESTIONS.

The questions related to site, style of building, construction material, heating, ventilation, number of beds in wards, classification of patients—as to ability to pay and as to disease, convalescent patients, kitchen, operating room, call system, provision for domestics, laundry, pathological department; and last, and, perhaps, most important of all, one to which fewest answers were given, the request to know the faults and defects in your own hospitals and any special ideas you had in respect to hospital construction generally. This question was asked in pursuance of a recommendation from Professor Osler to "Find out the mistakes the other fellow makes and then don't make them." You, no doubt, deferred answering this question until after you had heard this paper; therefore, it will be now your duty and your privilege to make your confession. Only a few of the points I shall dwell on briefly.

SITE.

From the ninety-five replies received concerning sites, the expressions "ideal," "perfect," "first-class," "very much," "un-surpassed" were applied to hospitals in suburban or residential districts, such as the Michigan Hospital for the Insane; The Memorial Hospital, Canton, Ohio; The Homeopathic Hospital, Rochester; The Eastern Maine Hospital; St. Joseph's Hospital, Glace Bay; The Brockton Hospital, Massachusetts, and a number of others.

Hospital sites referred to as "good," "satisfactory," or liked

“O.K.” and “well,” are the Centenary, St. Louis; Mercy Hospital, Chicago (Central); Worcester, Massachusetts (Residential); Lebanon, New York (high hill); Bell Memorial, Kansas City (suburbs); Macan Hospital, Georgia (central, on a hill); and many others, some central, some suburban.

The chief point in favor of the central location is that it is good for business—convenient for accidents and emergencies. It is generally more convenient also for the medical staff and medical students. A teaching hospital should preferably adjoin its medical college, a point to be considered in the choice of site. The superintendent of a large hospital in Chicago confesses that he dislikes the central location of his hospital. Where a hospital, though central, is located near a park, no strong objection is urged against its position. Placing the patients' welfare uppermost, I have no hesitation in saying that a hospital placed beyond the noise of the traffic of the city, and completely removed from the vicinity of its smoke and germ-laden atmosphere, is the ideal spot. Sir Henry Burdett, one of the greatest British authorities, advocates that *all* sick people requiring hospital attention should be cared for in such a location—in the “Hospital City.”

Let us for a moment consider the arguments which lead up to the conclusion that such a site is ideal. Drugs are every day becoming more distrusted by scientific therapeutists. Fresh air, sunshine, rest, proper diet, together with good nursing, have very largely taken their place. We are already utilizing as much as possible such means as are at hand—balconies, roof gardens and our grounds.

The value of light as a therapeutic agent has been rightly much advocated during the past few years. Some hospitals are spending thousands of dollars yearly in providing this form of treatment, with good results. An eminent specialist in light therapy, whom I saw this summer, informed me that one of his patients, a lady suffering from lupus, being obliged to go to the mountains for her holidays beyond the reach of Roentgen and Finsen rays, was directed by him to expose the ulcer to the direct rays of the sun for a certain portion of each day. The ulcer healed. Without doubt, the *perfect* site should afford air of the utmost purity, a maximum of sunshine, and perfect quietude—three most desirable adjuncts in the cure of disease.

There is only one word to be said in respect to the size of the site, and that is that it should be as large as possible. The Beverley Hospital, Massachusetts, has ten acres; Evanston Hospital, Illinois, five acres; Worcester, Massachusetts, seven acres; the

Municipal Hospital, Philadelphia, fifty-eight acres; St. Joseph's Hospital, Cape Breton, four acres, with a farm near by; William Backus Hospital, Norwich, Connecticut, twenty acres; Wolfsboro Hospital, New Hampshire, twenty-five acres; Agnew Hospital, California, three hundred and twenty acres. I should like to have a farm adjoin my ideal hospital.

A large site outside of the city limits can be purchased, as everyone knows, very much cheaper than an urban site, and where the amount of money available for a new hospital is limited the amount saved by building in the suburbs can be applied to construction and equipment. The average length of patients' stay in such a hospital is some days less than in a hospital in the city.

STYLE OF BUILDING.

The battle still wages over the style of building, as it does over most questions relating to hospitals; and the last word has not yet been said. Twenty years ago, when our knowledge of bacteriology began to influence hospital construction, the one-storeyed pavilions, separated from one another by corridors, over high, open basements, were much in vogue, particularly on the Continent of Europe. This Continental influence did not affect the larger centres of the British Isles, and has not influenced construction very markedly in America. The notable exceptions are to be found in the Johns Hopkins Hospital, Baltimore; the Presbyterian Hospital, Philadelphia; a hospital in Colorado, and another in Mexico.

Dr. Gilman Thompson, in a paper published during the past year, expresses his high appreciation of the construction of the Policlinico, Rome; the Virchow and the Moabit Hospitals, of Berlin, and the Bouciaut Hospital, Paris. The Virchow covers 96 acres; it has 53 separate buildings, with a capacity of 1,650 beds. The cost was \$2,250 per bed, which corresponds to \$2,500 and \$3,000 in this country. A favorite arrangement in these Continental hospitals is a pair of pavilions connected with a double-storeyed service building—these comprising a unit. Dr. Thompson is much enamored of this arrangement of buildings, as it permits of a much better classification of patients, is much cheaper in construction than the "sky-scraper" variety, and has much to do with a pleasanter and quicker convalescence.

On the other hand, in many of the large cities in Great Britain and America, of late years, the tendency has been to construct multi-storeyed hospitals in a central location, most recently exemplified by the New Jefferson Medical College Hospital Phila-

delphia. This building, eleven storeys in height, was completed last year at a cost of one million dollars. It accommodates three hundred patients. Such hospitals, while possessing very many virtues—being of first-class construction, compact and concentrated, convenient for business (if I may use the term), for administration, and for medical students, yet it is open to the objections I have referred to above. In the Continental variety, on the other hand, the spread over such an enormous extent, the cost of heating, the portorage of food and other supplies, and the difficulty of supervision would be well-taken objections.

The chief points, of course, to be kept in mind in considering the style and size of the hospital building or buildings, are the extent of the site, the number of patients to be accommodated, the character of the diseases to be treated, whether medical students are to be trained in it or not, and the amount of money at the disposal of the Building Committee. In the larger hospitals construction ought to be fireproof. For the small hospital and the one-storeyed hospital this feature is not so important.

While preparing this paper my mind has been dwelling on the construction of hospitals of the larger type, because we have for the past year been planning for the construction of a four hundred bed hospital in this city. Our plans include an administration building, running east and west, to contain, in addition to the administration offices, internes quarters and private wards. Running across each end of this building is to be placed a five-storey pavilion, one for medicine, the other for surgery, the latter having a two-storeyed operating department attached. Separate from this group of buildings an out-patient department is to stand, and also a domestic building, the latter to contain the kitchen and quarters for employees. In one corner of the grounds is to be placed the Nurses' Home. These plans, however, are subject to modification.

Where funds are not sufficient for separate pavilions, it is possible to effect a grouping of these departments, as has been done in the new Royal Victoria Hospital, Belfast. Here is a hospital, one storey high, with three hundred beds, which was constructed for one thousand five hundred dollars per bed. It is the most unique hospital I have ever seen. The wards, eighteen in number, lie side and side direct, each with an A shaped roof, through which sufficient light seems to be admitted. The administration building and the Nurses' Home are adjacent multi-storeyed buildings. The kitchen is in the basement, the out-patients' department is connected by corridor, and the superintendent's residence, the laundry, and the pathological department

are detached buildings. Heating and ventilating are provided by the Plenum system.

SIZE OF PUBLIC WARD.

Your recommendation as to the number of patients in a public ward runs from forty down to four. The favorite sized ward is twenty—twenty superintendents giving that as their idea of the right number. Seventeen superintendents recommend a twelve-bed ward. A few superintendents agree with Ochsner and Sturm that a still smaller ward is more desirable—that no ward should hold more than four to six patients. It would appear to me that twelve should be the minimum number of patients in a public ward and the maximum about twenty. This view is supported by a good many nurses whom I have interviewed while on duty. I do not think we can afford in a large hospital to build a ward running north and south, in which the sun will shine morning, noon and night, to hold less than twelve or fourteen beds. When the ward comes to be smaller than that we must introduce the corridor, which shuts out half the sunlight, that is, if the ward runs east and west. In our experience, I find that a night nurse has considerable difficulty in keeping an eye on twenty to thirty patients when housed in several small wards; whereas the night nurse who looks after this number of patients in one or two wards finds much less difficulty.

VENTILATION.

The ventilation of hospitals may be generally divided into several sorts.

First we have natural ventilation, by means of windows and openings through the walls to the outdoor air. These facilities, plus the fireplace, constitute the favorite kind of ventilation in a number of the larger hospitals in London, England, and New York. Dr. Gilman Thompson strongly favors this system of ventilation.

In the Western Infirmary, Scotland the air is admitted to the ward through openings in the walls behind hot water radiators, enters the ward, and, after being utilized, is extracted through openings near the ceiling by means of a fan operating at the top of the building. This system gives satisfaction there. The only objection I heard to it in that country was that if there were any mal-odors near the ward they would be sucked into it. I think this is not a strong objection, because the sanitary towers, so common there, are practically cut off from the ward. The objection I have heard to its use in Canada and Northern United

States is the danger that the water in the radiator may freeze and burst the pipes should any of the nurses or employees turn the valves off. I should be pleased to hear opinions on this point.

Then there is the Plenum system. This consists in pumping fresh air through water trickling down moist curtains, and, in winter, over hot water radiators: forcing it into the ward about the centre of the side walls and out through openings near the floor into flues which connect with a shaft ending in a protected turret at the top of the building. Supplementary hot water coils are placed contiguous to each ward, as may be found necessary, the heat from which may be utilized or not. This system I have heard condemned strongly in London, England; in New York, Chicago, and other American cities, but it appears to be working satisfactorily in the new hospital in Birmingham, a large new hospital in Paisley, and the new Royal Victoria Hospital in Belfast.

The City of Worcester Hospital has what might be called a Plenum system plus exhaust fans, the foul air being drawn into chambers in the basement. Four to eight thousand cubic feet per patient are pumped through the wards. The twenty-five motors which run the fans are one-half to two horse power each. By this system, of course, the hospital is heated and ventilated at one and the same time. The Worcester people say the results are eminently satisfactory. It may be remarked that the Superintendent of the Michael Reese Hospital, Chicago, where I saw a much similar system in operation two years ago, vigorously denounced it. Some hospitals in the Old Country where the Plenum system has been tried have abandoned it because nurses and patients developed anæmia. In one of the Glasgow hospitals where it was used the superintendent was not enthusiastic over it.

The New Jefferson Medical College Hospital has an exhaust system, the draft being made by coils of steam pipes placed in foul air shafts, which lead to the top of the building. It is noiseless in operation. A similar principle is in operation in some other hospitals, the exhaust pipes being connected with the main chimney stack.

Two or three hospitals report that they have what is called the Sturtevant system. The latest building introducing it is the new St. Luke's Hospital, Cleveland. Dr. Pickard, Superintendent, says: "It is a modern fan system, differing from all others that I have seen in that it sends to each room a double conduit, one-half of which is for hot air and one-half for cold air. Where it enters the room the amount of either kind to be admitted is regu-

lated by a single lever. This system seems to be very complete, although we have not tried it out thoroughly."

DIRECTION OF WARDS.

Ninety out of one hundred superintendents who were good enough to report to me recommend that wards should run north and south. It seems a pity that authors of our new work on hospital construction have recommended (indirectly) the restriction of the amount of sunlight in wards. To my mind, no ward can get too much of it. In this part of Canada, where we have so much dark weather from November to May, we are glad to see as much of the sun as possible, love to see it flood the wards, bathing the patients from head to foot. Very rarely do we find them complaining of too much of it, and when we do it is very easy to place a screen so as to put their eyes in shadow.

Dr. A. D. Macintyre, of the Kingston General Hospital, in a paper on fumigation, read at the last meeting of the Canadian Hospital Association, after pointing out the futility of the ordinary method of the gaseous fumigation, as usually carried out, said: "We should use all means of disinfection, such as taking the fixtures out of the room and exposing them to the sunlight and fresh air, then thoroughly wash the walls, floors and wood-work. Keep everything exposed as long as possible to the direct action of fresh air and sunlight, or, in the absence of the latter, to diffuse daylight. These are the agencies that have thus far tided us over in spite of faulty fumigation, and we should certainly give the credit where it is due."

ARRANGEMENT OF WARD DEPENDENCIES.

A great feature in the arrangement of ward dependencies is to have them convenient, in order to save labor and make the necessary work as easy and pleasant of performance as possible. A London hospital, and a new one being built in Paisley for sick insane people, have the bath rooms, closets and slop rooms opposite the centre of the ward. This arrangement, though somewhat lessening the amount of sunlight, to my mind is most convenient for nurses and orderlies. In the Old Country generally these conveniences are placed in sanitary towers at the distal end of the ward. This appears to me to be more desirable than having them placed near the diet kitchen, linen closet and other dependencies of the ward, in which case nurses and orderlies, bearing urinals and bedpans, at meal hours meet other helpers bearing the meals of the patients, which I consider objectionable. The

toilets should be capacious. I have a most favorable recollection of observing in the old Pennsylvania Hospital, Philadelphia, that the closet is large enough and its doors wide enough to admit a bed. The beds are on wheels, and can easily be moved by the orderlies into the closet when the patient wishes to use the bed-pan. This custom obviates the creation of a mal-odor to the disgust of the other patients in the ward.

My favorite ward would be at least fourteen feet high and twenty-eight feet wide, with a balcony running along the east and south sides, part of which can be closed in with glass and warmed in winter time. The door or doors leading to it should be wide and conveniently placed. The bottom of the door, of course, should be flush with the floor of the ward and the balcony. The floor of the balcony should be of glass or some material which will allow as much light as possible to enter the ward below.

Roof gardens are desirable, but only for such patients as are able fairly well to look after themselves. All bed patients and other patients requiring observation should be under the convenient supervision of the nurse who is in charge of the ward to which they belong. A recent observer states that enough outdoor accommodation should be provided to accommodate at least one-half of the patients in a hospital.

THE HOSPITAL UNIT.

In this connection I might for a moment advert to the hospital unit, a feature one notices in the Old Country hospitals more than he does in those in the United States and Canada. In several of the British hospitals I was interested in noting on one flat a large ward of some twenty patients for men, with sanitary towers at the distant end of the room, and the nurses' room, kitchen, linen closet, etc., at the near end. On the same floor, not far away, similar provision is made for females suffering from similar diseases. Between the two is a small suite of three rooms, the house surgeon's quarters. If the cases are surgical an operating room is attached. A small clinical laboratory is also convenient. These forty to fifty patients were looked after by one sister (head nurse); they were in charge of one house surgeon and in the service of one visiting surgeon and assistants. It is easy in such cases to keep track of the supplies which are given out to the officers in charge of such a hospital unit, and comparisons may be made weekly or monthly with other similar units. This arrangement makes for economy in administration.

OPERATING ROOMS.

The operating rooms of the hospitals you represent may be roughly divided into three classes as to size. Here are some of the dimensions of the larger: 50x50, 50x180 (total superficial area). 44x45, 60x60: seats five hundred: seats one hundred. Next in size: 25x32, 23x35, 30x35, 30x16, 32x40, 28x30, 30x40, 40x40. The smaller and most common are as follows: 10x15, 16x18, 20x20.

The favorite operating room is about 20x20 feet in dimension, with tiled floor and tiled wainscoting. As subsidiary rooms there are an anæsthetic room, a sterilizing room, an instrument room, a wash-up room, with conveniences, and a surgical room. Some hospitals have a recovery room near the operating room; others have their recovery room off the main surgical ward.

Where the operating department is under the charge of a special nurse who has nothing to do with the before and after treatment of the patient, my preference is to send the patient to a quiet room adjoining the surgical ward to which he belongs. In cases where the nurse who has charge of the patient during the operation, as well as before and after, *i.e.*, where the surgical unit system obtains, it does not matter so much.

Operating rooms are often ventilated by the same system which is used to ventilate the whole building. Many hospitals have a separate system for the operating room, in which fans are used on the Plenum and exhaust system. Probably the greater number of operating rooms have merely the natural method.

The favorite lighting for an operating room is from a north window and a skylight. These are sometimes combined by the use of a window similar to that used by photographers, facing the north star.

Duplicate instrument sterilizers are convenient in the operating room. The hot and cold water sterilizer may stand in an adjoining room, connected with the operating room by means of pipes and taps. The dressing sterilizer should be in a separate room, unless the operating room is a large one, such as in the new St. Luke's private pavilion, New York.

The tendency to-day is against the old-style operating room, with its amphitheatre arranged to seat a multitude of students. This witnessing the spectacle was not very helpful in teaching students the art of operating, and, I predict, will soon be a thing of the past. There is a new operating room in a hospital in Naples about 16x16. Running around its walls, about six feet from the floor, is a balcony, from the edges of which are glass

partitions sloping up towards the centre of the ceiling. Students lean against a railing behind this and look almost directly down upon the operation. By this arrangement I should fancy they may see more of what goes on than is possible in any other sort of theatre.

In visiting many American hospitals last year I felt convinced that it was a wise thing to mass operating rooms. I am not so convinced of this as I was, since visiting the excellent hospital presided over by our honored visitor, Dr. McIntosh. I would like to hear some discussion on this point.

ACCOMMODATION FOR PRIVATE PATIENTS.

Most superintendents present act as hosts to the millionaire as well as to the pauper. The care of patients who pay for more than the cost of maintenance constitutes one of the modern problems of hospital management, both in America and the British Isles. Here we charge our patients about all they can afford. They leave the hospital, reading the motto over our door, "I was sick and ye visited me." with a smile; and when the appeal is made to them for financial assistance they do not respond as they would to a pure charity.

A phase of the opposite situation was presented to me rather strongly this summer by an executive officer of one of the large hospitals in London, England. Over the door the sign, "Supported by Voluntary Contributions Only," met the eye of the curious cis-Atlantic visitor. This gentleman informed me that a considerable number of the patients treated have sufficient money to pay, or in part pay their way, but the hospital, although greatly needing money, received nothing or very little for the care given them.

This problem of looking after the patients who can afford better accommodation than the public wards has been dealt with in the most satisfactory way up to date by the St. Luke's Hospital, New York, and the St. Luke's Hospital, Chicago, in the erection of a hotel pavilion, in which all such patients are cared for by themselves. In our own Province the question has been best solved by the National Sanitarium Association, which has provided both in Muskoka and in Weston (a suburb of Toronto) two separate sanitarium buildings. The one at each place is used for free patients only, and for the support of these two free institutions strong appeal is made to the public for funds. The other two buildings are remote only half a mile from the corresponding free institutions, and take paying patients; the profits from the

two latter institutions are applied to the maintenance of the two former.

LAUNDRIES.

In American hospitals the laundry is in the basement, top floors and in separate buildings. In the larger hospitals the favorite location is a separate building placed somewhat centrally to the adjoining buildings. In many cases it is located in the same buildings as the boilers and engines, and in some instances is placed in a building which also contains the kitchen.

KITCHEN.

Kitchens are found in basements, top floors, and occasionally half way between the basement and attic. In some of the larger institutions they occupy separate buildings. The favorite location where there are a number of pavilions is in a separate building, in which one finds the officers, employees, and sometimes the nurses' dining rooms. It is connected with the patients' building by corridors, the food being carried on trucks bearing jacketed hot water food containers destined for the serving room of the ward. In the multi-storeyed building where the kitchen is located in the basement, a convenient arrangement is to send the food directly from the kitchen by automatic food elevators direct to each serving room.

One of the main arguments for the kitchen on the top floor is the avoidance of kitchen odors through the house. Situated here, it is also easier ventilated, and usually better lighted, and hence more sanitary and more easily kept clean. The offset is portage up and down of that portion of the provisions which constitutes the waste and refuse.

FLOORS.

Most ward floors are made of hardwood, maple being the favorite. A few have oak; some have pine. A number of hospitals put linoleum over the wood and are partial to it. In several hospitals the maple is laid over the fireproof concrete. An occasional ward floor is of cement, terrazzo or tile. Terrazzo is used in the children's ward in the Worcester. The New Jefferson Medical College Hospital have used a preparation called magnesite. They like it because it is non-absorbent, easily cleaned, resilient, and wears well. For operating rooms the favorite floor is tile. Next in popularity is terrazzo. A few have marble; and among the list of remaining floors we find florette, monolith, asbestolith, asphalt, asbestos, stone, murall and carbolite: while

many of the old-fashioned hospitals still use hardwood, either bare or covered with linoleum.

Schedule showing name of hospital, number of beds, cost of building, cost per patient:

| Name of Hospital. | Beds. | Cost of Building. | Cost per Patient. |
|------------------------------------|-------|-------------------|-------------------|
| Rochester, City | 139 | \$230,000 | \$1,654.67 |
| State Hospital, Hazelton, Pa... | 110 | 120,000 | 1,090.90 |
| Germantown Dispensary | 150 | 210,000 | 1,400.00 |
| Chicago Baptist | 100 | 40,000 | 400.00 |
| State Hospital, Springfield, Ill.. | 100 | 7,000 | 70.00 |
| Cincinnati Hospital | 500 | 900,000 | 1,800.00 |
| Bridgeport, Conn. | 140 | 300,000 | 2,142.85 |
| Homeopathic (Allan) | 350 | 600,000 | 1,701.42 |
| Lebanon, New York | 250 | 25,000 | 100.00 |
| Manhattan Ear, Eye and Throat | 150 | 506,676 | 3,377.84 |
| Allegheny General | 350 | 600,000 | 1,742.85 |
| Grace Hospital, Detroit | 150 | 200,000 | 1,333.33 |
| Worcester, Mass. | 280 | 563,440 | 2,012.28 |
| National Jewish | 132 | 315,000 | 2,386.37 |
| Presbyterian, Chicago | 275 | 250,000 | 909.09 |
| Lincoln, New York..... | 500 | 350,000 | 700.00 |
| St. Mark's, Salt Lake City..... | 150 | 180,000 | 1,200.00 |
| Newark, N.J. | 340 | 300,000 | 882.35 |
| Clifton Springs, N.Y..... | 400 | 300,000 | 750.00 |
| Lowell, Mass. | 150 | 145,000 | 966.66 |
| Wesley, Chicago | 175 | 200,000 | 1,142.85 |
| Mount Sinai, N.Y..... | 480 | 1,800,000 | 3,750.00 |
| Mersey Hospital, Chicago..... | 450 | 460,000 | 1,020.20 |
| City Hospital, St. Louis..... | 600 | 800,000 | 1,333.33 |
| Meth. Ep. Hospital, Brooklyn.. | 200 | 800,000 | 4,000.00 |

Selected Articles.

OPENING ADDRESS—ST. MARY'S HOSPITAL— ON NEURASTHENIA.

BY SIR JOHN F. BROADBENT, BART., M.D. OXON., F.R.C.P. LOND.

Sir John Broadbent, in the course of his remarks, said that great advances had been made in medicine, as in surgery, in recent years, but whereas in surgery the greater the advance the wider the field for the surgeon, in medicine, by a curious irony of fate, the greater the advance the more limited the scope for the physician. As a result of the progress in bacteriology, and the prophylactic and sanitary precautions rendered possible thereby, plague and cholera could get no foothold in this country, typhus was practically extinct, and typhoid fever was rapidly becoming so. Small-pox, but for recent retrograde legislation, should be in a fair way of being stamped out: diphtheria, thanks to the serum treatment, had lost its terrors; and consumption, he hoped, might, by suitable prophylactic and therapeutic measures, be got under control in the near future. He looked forward also to some Utopian era when such diseases as influenza, pneumonia, measles, scarlet fever, and the like would become more or less extinct as a result of the proper ventilation of offices, shops, public buildings, and private houses, and other sanitary measures such as the avoidance of overcrowding, the abolition of children's parties, and the habit of indiscriminate kissing. This latter should not be a hardship if they accepted the schoolboy's definition of a kiss, "that it is just putting your mouth to a person's cheek, and drawing in your breath so that you make a little noise, which is not bad, but it does nothing in the way of helping you to love the person."

There would still, however, be left to the physician a host of other maladies which we need not enumerate, and among them was what he considered one of the most serious disorders of the present day—neurasthenia, or nervous breakdown, as he would prefer to call it. By this he did not mean the born-tired feeling of the unemployable, or the *blasé* invertebrate condition of the born-rich without occupation, but the loss of nerve control and of mental energy which came to the neurotics when the

nervous system was strained to breaking point. In such a case a patient would look to the physician to assume command. Unfortunately, the tendency of a large section of the British public at the present time was to take no physician at all, but to take some of the secret so-called remedies for every ill, that were advertised in such a bare-faced manner in the daily press. It was calculated that over 2,500,000 pounds sterling was spent on this kind of trash during the past year. He thought that if the medical profession would set to work and see that some legislation was adopted to check the indiscriminate sale of these articles, they would do more good than constantly crying out about hospital abuse by patients who could afford to pay. Personally he had seen very few who could be suspected of coming to his out-patient department under false pretences, and they were at St. Mary's Hospital safeguarded against such abuse by the services of an inquiry officer, who investigated the financial position of any doubtful case, and referred the patient to a special committee, who rejected him if he could afford to pay a doctor. This precaution should be adopted at all hospitals, and he thought that it would be an excellent thing if there were some co-ordination of hospitals with neighboring provident dispensaries, so that cases unsuitable for treatment at the former could be referred to the latter.

There were some points, however, in out-patient work, which, in his opinion, were eminently unsatisfactory from the point of view both of the physician and of the patient. The first of these was the treatment of the consumptive patient. In this country the excellent results obtained at the Frimley Sanatorium by Dr. Patterson and Dr. Inman, both St. Mary's men, by the scientific methods they employed in utilizing the opsomic index as a means of graduating the amount of work which could be safely undertaken by convalescent patients, had shown how the consumptive working man could be restored to a condition of health and bodily vigor such that he could again undertake the most arduous manual labor. It would, however, be many years before the supply of sanatoria for the poor could possibly equal the demand. In the meantime it was desirable and essential for the proper control of the disease that there should be some co-ordinated medical and sanitary supervision, not only of cases awaiting sanatorium treatment, but also of the large number of cases considered too advanced for this. Another question which was a pressing one at the present time was that of the dental needs of the poor. Personally he should like to see the work of their hospital's own dental department extended to the filling

of teeth and the supply of dentures. Of course, that would be a mere drop in the ocean in respect of the needs of London, but, if this work were carried out at all the general hospitals, and special dental departments were started at the provident dispensaries, substantial help could be afforded. As a prophylactic measure, children at county council schools should be instructed as to the necessity of the toothbrush as a hygienic measure. As an additional precaution, there might be a dental inspection once or twice a year, and those requiring treatment could be drafted off to a dental department.

There was one other point he would like to touch upon. In the out-patient department they saw many distressing cases, in which the bread-winner, though seriously ill, was unwilling to give up his work and come into hospital for a time, though the rest and treatment there afforded might avert a fatal issue, as he said that this would mean starvation for his wife and family. He would like to see the hospital in touch with some charitable agency, so that some provision could be arranged for the support of the wife and family while the breadwinner was temporarily incapacitated. He was sure there would be little difficulty in raising a special fund for the purpose, and he thought that some charitable agency, such as the Charity Organization Society, would be only too glad to act as almoners to the fund. In these days, when so much was done for the unemployed, for whom work and a comfortable berth at a farm colony were provided by public subscription, he believed it was time that something should be done for the genuine working man, who, from no fault of his own, was temporarily incapacitated by illness.

Replying to a vote of thanks for his address, Sir John Broadbent created much laughter by reading a letter from a young man who had been a victim to dyspepsia for some time, and who wrote that, having heard that typhoid fever was a specific for his ailment, if it were possible to be inoculated with typhoid fever, he would be very willing to make the experiment.—*Medical and Press Circular*:

ADDRESS AT THE MIDDLESEX HOSPITAL,
OCTOBER 1, 1908.

BY MR. RUDYARD KIPLING.

After Mr. Kipling had presented the prizes to the successful students, he delivered the following address:

Gentlemen,—It may not have escaped your professional observation that there are only two classes of mankind in the world—doctors and patients. I have had some delicacy in confessing that I have belonged to the patient class ever since a doctor told me that all patients were phenomenal liars where their own symptoms were concerned. If I dared to take advantage of this magnificent opportunity which now is before me, I should like to talk to you all about my own symptoms. However, I have been ordered—on medical advice—not to talk about patients, but doctors. Speaking, then, as a patient, I should say that the average patient looks upon the average doctor very much as the non-combatant looks upon the troops fighting on his behalf. The more trained men there are between his body and the enemy, he thinks, the better.

I have had the good fortune this afternoon of meeting a number of trained men who, in due time, will be drafted into your permanently mobilized army which is always in action, always under fire against death. Of course, it is a little unfortunate that Death, as the senior practitioner, is bound to win in the long run, but we non-combatants, we patients, console ourselves with the idea that it will be your business to make the best terms you can with Death on our behalf: to see how his attacks can be longest delayed or diverted, and, when he insists on driving the attack home, to see that he does it according to the rules of civilized warfare. Every sane human being is agreed that this long-drawn fight for time that we call life is one of the most important things in the world. It follows, therefore, that you, who control and oversee this fight, and who will reinforce it, must be amongst the most important people in the world. Certainly the world will treat you on that basis. It has long ago been decided that you have no working hours that anybody is bound to respect, and nothing except your extreme bodily illness will excuse you in its eyes from refusing to help a man who thinks he may need your help at any hour of the day or night. Nobody will care whether you are in your bed, or

in your bath, or on your holiday, or at the theatre—if any one of the children of men has a pain or a hurt in him you will be summoned. And, as you know, what little vitality you may have accumulated in your leisure will be dragged out of you again.

Calls on Medical Men.—In all time of flood, fire, famine, plague, pestilence, battle, murder, and sudden death, it will be required of you that you report for duty at once, that you go on duty at once, and that you stay on duty until your strength fails you or your conscience relieves you, whichever may be the longer period. This is your position. These are some of your obligations, and I do not think that they will grow any lighter. Have you heard of any legislation to limit your output? Have you heard of any bill for an eight hours' day for doctors? Do you know of any change in public opinion which will allow you not to attend a patient when you know that the man never means to pay you? Have you heard any outcry against those people who can really afford surgical appliances and yet cadge round the hospitals for free advice, a cork leg, or a glass eye? I am afraid you have not.

It seems to be required of you that you must save others. It is nowhere laid down that you need save yourselves. That is to say, you belong to the privileged classes. I am sorry you have met my demonstration with a certain amount of levity. May I remind you of some of your privileges? You and kings are about the only people whose explanation the police will accept if you exceed the legal limit in your car. On presentation of your visiting card you can pass through the most turbulent crowd unmolested and even with applause. If you fly a yellow flag over a centre of population you can turn it into a desert. If you chose to fly a Red Cross flag over a desert you can turn it into a centre of population, towards which, as I have seen, men will crawl on hands and knees. You can forbid any ship to enter any port in the world. If you think it necessary to the success of any operation in which you are interested, you can stop a 20,000 ton liner with mails in mid-ocean till the operation is concluded. You can tie up the traffi of a port without notice given. You can order whole quarters of a city to be pulled down or burnt up, and you can trust on the warm co-operation of the nearest troops to see that your prescriptions are properly carried out.

The Gifted Amateur.—To do your poor patients justice, we do not often dispute doctors' orders unless we are frightened or upset by a long continuance of epidemic diseases. In this case, if we are uncivilized, we say that you have poisoned the

drinking water for your own purpose, and we turn out and throw stones at you in the street. If we are civilized, we do something else, but a civilized people can throw stones, too. You have been, and always will be, exposed to the contempt of the gifted amateur—the gentleman who knows by intuition everything that it has taken you years to learn. You have been exposed—you always will be exposed—to the attacks of those persons who consider their own undisciplined emotions more important than the world's most bitter agonies—the people who would limit, and cripple, and hamper research because they fear research may be accompanied by a little pain and suffering. But you have heard this afternoon a little of the history of your profession. You will find that such people have been with you—or, rather, against you—from the very beginning, ever since, I should say, the earliest Egyptians erected images in honor of cats—and dogs—on the banks of the Nile. Yet your work goes on, and you will go on.

You remain now, perhaps, the only class that dares to tell the world that we can get no more out of a machine than we put into it; that if the fathers have eaten forbidden fruit, the children's teeth are very liable to be afflicted. Your training shows you that things are what they are, and will be what they will be, and that we deceive no one except ourselves when we pretend otherwise. Better, still, you can prove what you have learned. If a patient chooses to disregard your warnings, you have not to wait a generation to convince him. You know you will be called in in a few days or weeks, and you will find your careless friend with a pain in his inside or a sore place on his body precisely as you warned him would be the case. Have you ever considered what a tremendous privilege that is? At a time when few things are called by their right names—when it is against the spirit of the time even to hint that an act may entail consequences—you are going to join a profession in which you will be paid for telling man the truth, and that every departure you may make from the truth you will make as a concession to man's bodily weakness, and not mental weakness.

Realizing these things, I do not think I need stretch your patience by talking to you about the high ideals and the lofty ethics of a profession which exacts from its followers the largest responsibility and the highest death-rate—for its practitioners—of any profession in the world. If you will let me, I will wish you in your future what all men desire—enough work to do and strength enough to do the work.—*Medical Press and Circular.*

Editorials.

THE UNIVERSITY MEDICAL FACULTY AND ITS DEAN.

We believe there is a universal feeling of regret that Dr. R. A. Reeve has sent in his resignation of the position of Dean of the Medical Faculty of the University of Toronto. In many universities the dean of a medical faculty is not expected to look after all the details of administration, but is looked upon simply as a presiding officer, whose chief duty is to act as Chairman at faculty meetings. Dr. Reeve, however, has done much more than this. He has taken a deep interest in all the complicated machinery of the faculty, which has grown tremendously during his regime, and has conscientiously done an enormous amount of work.

It is probable that no one person fully appreciates the amount of work that he has done. While this is true, most, if not all, who have watched his course agree that his work has been magnificent: as captain, he has been patient and fair-minded under many trying circumstances, and has materially helped in carrying the ship through some rather serious storms. We offer our sincere congratulations to Dean Reeve for the great work which he has done.

We understand that his resignation has not yet been accepted, and that he has been asked to remain in harness a short time longer.

We have no desire to say much as to his successor, but we believe it would give general satisfaction if Dr. Temple, who was Dean of Trinity Medical College when the amalgamation took place, were appointed. We do not know, however, whether he would be willing to accept the responsibilities connected with the position. He is not the sort of a person who seeks such honors, but he is a strong, able and highly respected man, whose appointment at the present juncture would, in our opinion, be a graceful and wise act.

RESIDENCES FOR THE UNIVERSITY OF TORONTO.

Three handsome residences for male students of the University of Toronto have been built, at a cost of \$165,000, of which Mr. E. C. Whitney, of Ottawa, contributed \$55,000. The Government gave \$50,000, the balance of \$60,000 being contributed chiefly by Messrs. Lash, William Mackenzie, Hiram Walker & Sons, W. T. White, E. R. Wood, J. W. Flavelle, Miller Lash, Lever Brothers, and Dr. F. S. Pearson, New York.

The buildings will accommodate 150 students, and are situated at the north-east corner of Hoskin and Devonshire Avenues, immediately south of the athletic field.

Each residence has three floors, traversed throughout by a hall off which rooms open. These rooms are arranged in a variety of ways—some being single rooms, but mostly studies, with two or three bedrooms off each. The construction being terra cotta and concrete throughout, all the buildings are fire-proof. On each floor there are two bathrooms, with basins and shower baths. A prominent feature of each residence is a large common room opposite the main entrance, and at the top of the stairway on each floor.

The students will simply be lodgers in these residences, and will take their meals in the Students' Union Dining Hall.

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS, WASHINGTON, D.C.

For the first time since its organization, the International Congress on Tuberculosis has met in America. The registration was about 7,000—the largest in its history. The effects of this great gathering of scientists, clinicians and social workers must be far-reaching. No one could attend the sessions, and hear the discussions without becoming thoroughly imbued with the necessity of action—prompt action—in the institution of measures designed to lessen the prevalence of tuberculosis along the

line indicated in the resolutions, which were endorsed at the general meeting of the Congress on the last day.

The exhibit of the Department of Health of the City of New York shows positively what can be done in a large city to lessen the mortality from consumption. The campaign against tuberculosis has been waged steadily and persistently since 1895, and the measures which have been instituted have lessened in a notable manner the annual deaths from this disease. Notification has been adopted, supervision instituted, hospitals, sanatoriums and dispensaries provided, fumigation carried out in all cases after death or removal, unsanitary tenements condemned, and other regulations enforced.

There can be no doubt that every measure that makes for a higher standard of living is of value in the campaign against tuberculosis, and that improved sanitation has done much to lessen the mortality in recent years in England and Prussia.

In his lecture on the decreased mortality from tuberculosis in England, Dr. Arthur Newsholme made the statement that 1 per cent. of the population live in institutions—hospitals, poorhouses, asylums—and that, in some cities, over one-quarter of the deaths from consumption were reported from hospitals. The removal of these patients, generally the very poor, from their homes when in the advanced stages, removes many foci of infection, and has been one of the factors in lessening the mortality. Would that our Canadian hospitals made provision for these patients. From the report made to the Congress by the Canadian Committee, we learn that British Columbia, Alberta and Saskatchewan now require all hospitals receiving provincial aid to provide beds for consumptives in special pavilions or tents. Vancouver General Hospital has a special building for their care. In the East, with a few exceptions, such patients are not admitted to the hospitals, but must die at home or on the street, unless taken in hand by other agencies. In towns and counties where there are already existing hospitals, and the number of cases of advanced tuberculosis present does not warrant the erection and maintenance of a special hospital, the situation must be met by setting aside a ward, or building a

pavilion for their case. Infection of attendants and staff never occurs in sanatoriums—it will not occur in hospitals, if nurses are instructed in the care of the consumptive—and provision for consumptives in our hospitals would be made at once on the request of our profession. Has not our profession been responsible for their exclusion: yet what grounds are there for it, other than a mistaken idea as to its infectivity, and the one reason—which is a genuine one—that our hospitals are for acute cases only.

We must regret that the Canadian exhibit was so small. From the Pathological Museum, McGill University, were 82 specimens illustrative of tuberculous affections of various organs and tissues in man and animals. Tranquille was the only sanatorium represented, and there was a collection of literature from the Canadian Association for the Prevention of Tuberculosis. The work being done by the National Sanitarium Association, the Montreal League, the Toronto Free Hospital for Consumptives, the Hamilton Health Association, and other agencies in Canada would have compared most favorably with that from other countries.

Canada, with a population of 6,500,000, loses 13,500 citizens each year by tuberculosis. Our profession must do its part in awakening our authorities—Dominion, provincial and municipal—to the necessity of more active measures in its suppression. The State of Pennsylvania, during the past five years, has given \$500,000 to special hospitals and sanatoriums, and last year the State Board of Health received an appropriation of \$1,000,000 to combat the disease.

The International Congress has outlined methods of work. Let the profession and the people ask our governments for like appropriations, and we shall get it if we show that we are in earnest.

Among the Canadians in attendance were the following members of the Ontario Board of Health: Dr. Sheard (Chairman), Dr. Hodgetts (Secretary), and Dr. McAllister, of Chatham. They are very enthusiastic, and say that the Congress was a remarkable success in all respects. The Congress lasted three

weeks, and among those present were many of the greatest scientists of both the old and new worlds. Dr. Sheard tells us that perhaps the most eloquent of these distinguished men was our good friend, Professor Landouzy, Dean of the Medical Faculty of Paris.

One of the most interesting features of the Congress was the preparation of abstracts of all the papers by a committee having special charge of the work. Complete sets were made in four languages—English, French, German and Spanish—and each member, when he registered, received one of these sets.

HUMAN AND BOVINE TUBERCULOUS DISEASE.

The press of both the United States and Canada paid much attention to the Washington Congress, and some of the reports caused considerable surprise.

We are told by the *New York Medical Journal* that they were "almost unanimous in circulating false reports." "They went so far as to put a striking statement into the mouth of an eminent physician who was not even present on the occasion when he was said to have proclaimed it. They have sedulously given their readers to understand that a rancorous controversy took place as to the reality of human tuberculous disease of bovine origin, and have pictured almost all the other participants in the Congress as manifesting violent opposition to Koch's well-known views on the subject. The actual proceedings did not justify such a picture. Koch was greeted with general enthusiasm, and with the deference due to such a distinguished man of science. Those who dissented from some of his views on the relations between human and bovine tuberculous disease expressed themselves courteously, and with no more warmth than the vast importance of the subject called for.

Koch does not seem to have receded essentially from the position which he took in London six years ago. He does not deny that the human and the bovine tubercle bacilli are of one species, though he still insists that they show certain recognizable differences.

As we understand it, Koch admits the transmissibility of bovine tuberculous disease to the human subject, but insists that it has not yet been demonstrated that pulmonary manifestations of the disease occur when it is thus transmitted. Even on this point, however, Koch urges that further investigation be carried on, and he specifies the conditions which, in his opinion, ought to be observed in subsequent researches.

In the meantime, of course, the world must conduct the struggle against tuberculous disease on the assumption that he is mistaken; we must neglect no means to restrict the possibility of human infection from bovine sources."

The International Medical Congress.

Arrangements are being made for this meeting, which is to be held in Budapest, August 29 to September 4, 1909, and the committee wishes to remind the medical profession that contributions to the Congress must be announced to the Secretary before January 1, 1909. Manuscripts should be in the hands of the Committee by January 31, 1909. Attention is also called to the fact that the time allowed for the reading of a paper is not more than twenty minutes. The request is made that manuscripts be clearly written, as the proofs are to be corrected at the office of the General Secretary. Copies of manuscripts will be returned by July 31, 1909. The General Secretary of the Congress is Professor Emil Grosz, M.D., Budapest, VIII., Esterhazy-uteza 7. Blank forms of application for membership to the Congress and for the presentation of papers can be obtained from the Secretary of the Canadian Committee, Dr. W. H. B. Aikins, Toronto.

THE Board of Governors of the University of Toronto have made the following appointments:

Dr. M. M. Crawford, demonstrator in obstetrics; Dr. G. W. Ross, assistant in clinical medicine; Dr. E. C. Burson, demonstrator in clinical medicine; Dr. W. H. Cronyn, assistant in clinical medicine; Dr. R. W. Mann, assistant in clinical medicine; Dr. J. H. McPhedran, assistant in clinical medicine; Dr. E. E. Cleaver, assistant in clinical laboratory; Dr. H. S. Hutchison, demonstrator in clinical medicine; Dr. F. S. Ryerson, assistant curator of the pathological museum; Dr. F. W. Rolph, assistant in clinical laboratory; Dr. O. T. Dinnick, demonstrator in

clinical surgery; Dr. E. Gallie, demonstrator in clinical surgery; Dr. A. B. Wright, demonstrator in clinical surgery.

Class assistants in pharmacology—P. B. MacFarlane, L. B. Robertson, F. C. Harrison, A. B. Maclaren, W. F. I. Dey; Dr. W. S. Lemon, demonstrator in therapeutics.

Personals.

Dr. G. Alexander Davies announces to the profession that he is confining his practice exclusively to Diseases of the Eye, Ear, Nose and Throat.

Dr. J. S. Fitzgerald, Clinical Director and Pathologist at the Toronto Asylum, has gone to Boston as a voluntary assistant in neuropathology and experimental pathology in Harvard Medical School.

Lieut.-Col. Jas. A. Grant, M.D., of the Permanent Army Medical Corps, has been appointed temporarily to the post of principal medical officer of Western Ontario, in the place of Lieut.-Col. Nattress, deceased. It is expected that the appointment will soon be made permanent. Col. Grant is the son of Sir James Grant, of Ottawa, and was educated at Queen's University, Kingston.

Obituary.

SIR ARTHUR VERNON MACANN, B.A., M.B.

Sir Arthur Macann, King's Professor of Midwifery, Trinity College, Dublin, formerly Master of the Rotunda Hospital (1882-7), died of heart disease Sept. 25th, aged 65.

WILLIAM GEORGE TYNER, B.A., M.D.

Dr. Tyner, of Whitby, was found dead on the roadside between Belleville and Picton early on the morning of October 15th. His automobile lay on the top of him, and he had evidently been killed instantly. It would appear that he had gone off the road in the darkness. He was 33 years of age, and had practised in Picton about seven years. He graduated B.A. in 1878, and M.D. in 1901, from Queen's University, Kingston.

Report of Medical Societies.

INTERNATIONAL CONGRESS ON TUBERCULOSIS.*

BY DR. J. H. ELLIOTT.

Secretary Canadian Committee of International Congress.

This Congress, which meets every third year, has met this year in Washington, its deliberations there occupying the week September 28—October 3. During the previous week Philadelphia was visited, and the subsequent week, Baltimore, Boston and New York. The first and third weeks were devoted principally to visiting and inspecting sanatoriums, hospitals, dispensaries, and other institutions in and near these large cities.

The week in Washington was taken up with papers and discussions thereon, morning and afternoon, with public lectures during the evenings. The Entertainment Committee saw that there were no idle moments, all time not taken with actual work of the Congress being filled with hospitable functions, affording the foreign visitors many pleasant hours and allowing them to carry away delightful recollections of the days spent in the Capital.

In the month of May, when President Roosevelt accepted the presidency of the Congress, he intimated that official duties might prevent his presiding at the opening meeting of the Congress. Secretary Cortelyou was deputed to preside on the first day, at which session the various foreign delegates presented their credentials on behalf of the governments represented.

At the closing session on Saturday, held in the Congress Hall, in the immense new National Museum, Mr. Cortelyou again presided. Previous to the hour of 11 a section of the Marine Band delighted the audience with its superb music. When the session was called to order the resolutions of Congress were read, then the various delegates delivered their messages of farewell, filled with expressions of gratitude for the pleasure given them while in America.

The representatives of the various countries who spoke were: For Argentina, Dr. Fermin Roderiguez; Austria, Dr. Hermann van Schrotter; Belgium, Dr. Denys; Canada, Dr. Frederick

* A Report made to the Section in Medicine, Academy of Medicine, Toronto, October 13, 1908.

Montizambert; China, Dr. Jee; Costa Rica, Dr. Juan J. Ulloa; Cuba, Dr. Diego Tamayo; Denmark, Dr. Bang; Egypt, Dr. J. B. Piot Bey; England, Dr. Thomas J. Stafford; France, Prof. Landouzy; Germany, Dr. Von Leube; Guatemala, Mr. R. Bengoechea; Japan, Dr. G. Suto; Hungary, Dr. Detre; Italy, Dr. Stella; Mexico, Dr. E. Liceaga; Holland, Dr. N. Th. Tendeloo; Norway, Dr. F. C. Harbitz; Panama, Dr. Martin J. Echeverria; Roumania, Dr. S. Trimescu; Russia, Dr. A. A. Wladimiroff; Siam, Paul G. Wooley; Spain, Dr. Camile Calleja; Sweden, the Hon. Conrad Cedercrantz; Switzerland, Dr. O. Amrein; Uruguay, Dr. Luis Melian Lafinur.

Scarcely had these felicitations ended when President Roosevelt appeared and made his way through the crowded hall to the front of the platform amidst tumultuous applause. As soon as order was restored and greetings given to the Chairman and Secretary, he characteristically plunged at once into his address, which is well worth reproducing:

"I could not deny myself the privilege of saying a word of greeting to this noteworthy gathering. It is difficult for us to realize the extraordinary changes, the extraordinary progress, in certain lines of social endeavor during the last two or three generations, and in no other manifestation of human activity have the changes been quite so far-reaching as in the ability to grapple with disease.

"It is not so very long, measuring time by history, since the attitude of man toward a disease such as that of consumption was one of helpless acquiescence in what he considered to be the mandates of a supernatural power.

"It is but a short time since even the most gifted members of the medical profession knew as little as any layman of the real causes of a disease like this, and, therefore, necessarily, of the remedies to be invoked to overcome them. It is an affair of decades—I am almost tempted to say an affair of years—when we go back to cover the period in which progress has been made.

"Take, for instance, the work that the United States Government is now doing in Panama. When the first railroad was built across Panama it was said, with some foundation of truth, with but slight exaggeration, that every sleeper laid cost the life of a man. Now the work on the canal, in that identical place, is being prosecuted, on an infinitely larger scale, of course, than the mere building of a railroad, under conditions which make the locality stand above the ordinary locality in the United States in point of health.

“The Isthmus of Panama, which was a by-word for fatal diseases, has become well-nigh a sanitarium; and it has become so because of the investigations of certain medical men, which enabled them to find out the real causes of certain diseases, especially yellow fever and malarial fever, and to take measures to overcome them. The older doctors here, when they were medical students, would have treated the suggestion of regarding mosquitoes as the prime source of disease like that as a subject for mirth. Isn't that literally true?

“These utterly unexpected results have followed patient, laborious, dangerous, and extraordinarily skilful work that has enabled the cause of the disease to be found and the diseases themselves to be combated with extraordinary success. I said dangerous work. That success had its martyrs: doctors laid down their lives to secure the results of which I have spoken, showing exactly as much heroism as ever was shown by the soldier on the field of battle.

“At this moment in the middle of the continent of Africa there is a peculiarly fatal and terrible disease, the sleeping sickness; a disease which, if it had been known to our ancestors in the Middle Ages, would have been spoken of as the Black Death was spoken of in the Middle Ages—as a scourge sent of God, possibly as something connected with a comet, or some similar explanation would have been advanced. We now know it is due to the carrying of a small and deadly blood parasite by a species of biting fly, there being this very curious genus of biting flies in Africa, one form of which, although harmless to wild animals and man, conveys by its bite a fatal infection to all domestic animals, and even to the closest allies of the wild animals, to which its bite is fatal; while the other form, which does not seem to be fatal to domestic or wild animals, is responsible for the spread of this terrible disease, the sleeping sickness, which in one region killed 200,000 out of 300,000 inhabitants—a rate of slaughter, of course, infinitely surpassing that of any modern war.

“And the chance to control that disease lies in the work of just such men as, and, indeed, of some of the men who are assembled here. You who have come here, however, have come to combat not a scourge confined to the tropics, but what is on the whole the most terrible scourge of the people throughout the world. But a few years ago hardly an intelligent effort was made or could be made to war against this peculiarly deadly enemy of the human race.

“The chance successfully to conduct that war arose when the greatest experts in the medical world turned their trained intelligence to the task. It remains for them to find out just what can be done. The task then will be for the representative of the government to give all possible effect to this conclusion of the scientific men.

“The change in the status of the men of science during the last century has been immeasurable. A hundred years ago he was treated as an interesting virtuoso, a man who was capable of giving amusement, but with whom no practical man dealt with any idea of standing on a footing of equality.

“Now, more and more, the wisest men of affairs realize that the great chance for the advancement of the human race in material things lies in the close interrelationship of the man of practical affairs and the man of science, so that the man of practical affairs can give all possible effort to the discoveries of the most unforeseen and unexpected character now made by the man of science.

“I feel that no gathering could take place fraught with greater hope for the welfare of the people at large than this. I thank you all, men and women of this country, and you, our guests, for what you have done and are doing. In behalf of the nation, I greet you, and I hope you will understand how much we have appreciated your coming here.”

Dr. Antonio Stella, representing Italy, formally invited the Congress to meet next in Rome in 1911, on the occasion of the celebration of the fiftieth anniversary of the Eternal City as the capital of modern Italy. Seconded by Dr. Abraham Jacobi, of New York, “the grand old man of science,” the invitation was accepted by a rising vote.

In response, Dr. Stella spoke feelingly of the cordial reception shown the delegates to the Congress by the American people, and added that when the Congress gathered in Italy delegates “would find that, though Italian civilization was more than 3,000 years old, modern Rome was but fifty years young.” Dr. Stella supplemented his invitation with a greeting from King Emmanuel, communicated through Baron Mayor des Planches, Italian Ambassador to the United States.

For the discussion of papers the Congress was divided into seven sections, which met morning and afternoon. In addition to the section work, there was a tuberculosis exhibit, representing 438 contributors, 312 within the United States, 126 foreign. Of these, 222 were collective contributions, that is, from associa-

tions, societies and other corporate bodies, and 216 were from individual members of the Congress. This exhibit represented as well as possible the progress and achievements of the whole scientific world in its struggle against tuberculosis since the discovery of the tubercle bacilli in 1882. The extent of this may be appreciated in saying the exhibits were listed in a catalogue of 300 pages and covered almost every phase of the tuberculosis question. The Pathological Department showed cultures of bacilli on various media, infected organs and tissues from man and animals, tuberculous meat condemned at the abattoirs; the Boards of Health showed what is being done by states and municipalities; associations exhibited photographs and charts illustrative of their works; sanatoriums showed plans, models and photographs of infirmaries, pavilions, tents and other buildings; dispensaries and their work were well explained by models and photographs; playground associations showed some splendid models. Germany sent one of the government's travelling exhibits, *tuberculose-wandermuseum*: there was a model dairy with cows milked daily, milk bottled and stored, bacterial counts made and posted; dustless sweepers, census methods, racial incidence. Everything relating to tuberculosis seemed to be somewhere present. Practically every civilized country and state was represented, from Argentine and Austria to Uruguay and Wisconsin. The various exhibits were demonstrated each day in one of the four official languages.

The sections were divided as follows:

Section 1—Pathology and Bacteriology.

Section 2—Clinical Study and Therapy of Tuberculosis—Sanatoria, Hospitals and Dispensaries.

Section 3—Surgery and Orthopedics.

Section 4—Tuberculosis in Children—Etiology, Prevention and Treatment.

Section 5—Hygienic, Social, Industrial and Economic Aspects of Tuberculosis.

Section 6—State and Municipal Control of Tuberculosis.

Section 7—Tuberculosis in Animals and its Relation to Man.

Section 1 devoted much time to the question of tuberculin and immunity, holding one joint session with Section 7 on the relation of human and bovine tuberculosis. Though the work of the other sections presents much that is valuable and practical, a short review of Sections 1 and 2 would seem of most interest to present to this section of our Academy.

Rosenau (Washington) spoke of the difficulty in distinguish-

ing between live and dead bacilli; both may produce somewhat similar effects in animals; the failure to make secondary inoculations causing great discrepancy in experimental results. The thermal death point is well established—60° C. for 20 minutes or less. Weinzirl's experiments showed that direct sunlight usually killed the B. tuberculosis in two to ten minutes; diffuse light materially shortens its life, the organism being killed within a week. This has its practical application in the importance of light in dwellings.

André (University of Lyons) reported that flies are active agents in the dissemination of Koch's bacillus, because if opportunity offers they are constantly going back and forth between contagious sputa and feces and foodstuffs, which they pollute with their feet and excretions. Bacilli appear in the excretion of flies six hours after ingestion of sputum, and some may be found as long as five days later. Food polluted by flies thus fed contains infective bacilli and produces tuberculosis in guinea pigs; flies also absorb bacilli contained in dry dust. The sputa and feces of consumptives must be disinfected and kept from flies. Rosenberger (Philadelphia) made a further communication on the presence of bacilli in feces. Tubercle bacilli were found in the feces of every patient when demonstrated in either sputum or urine, and in many cases in which the tuberculous process was either of the acute miliary type or seemingly of a strictly localized nature (*c.g.*, glandular, etc.) These bacilli in feces were found to live in water for over a year. It is most important to know that bacilli may be present in the urine and feces of almost all cases of tuberculosis, whether genito-urinary, intestinal, respiratory or glandular. This has its bearing on the infectiousness of sewage and of the water supply. Prof. Wm. T. Sedgwick, of Boston, has shown that for every death from typhoid fever avoided by the purification of polluted water supplies, two or three deaths are avoided from other causes, and among these "other causes" pulmonary tuberculosis holds an important place. In the report "Tuberculosis in Massachusetts" he shows conclusively that polluted water supplies appear to increase the general mortality of communities from tuberculosis; pure water supplies to diminish that mortality. He draws attention to the fact that in Hamburg the mortality rate from tuberculosis fell much more rapidly after the installation of sand filters, corresponding to the result of similar studies made in Massachusetts. This conveys a lesson to us in Toronto and impresses us with the wisdom of keeping our lake supply clear of sewage contaminations.

Woods Price (Saranac Lake) reported experimental work showing that the forks, spoons and tea cups used by advanced consumptives carry living tubercle bacilli, but none are found after ordinary good washing with hot water.

The Cutaneous and Conjunctival Tuberculin Reactions.—These were discussed by Calmette, Von Pirquet, Wolff Eisner, Baldwin, Detre, and others. Some of the conclusions regarding use of the conjunctival tests were: (1) Weak solutions ($\frac{1}{2}$ per cent.) have value in confirming a diagnosis of tuberculosis in early stages. (2) Instillation should not be repeated. (3) The reaction has little value when symptoms of tuberculosis lead only to a suspicion. (4) It should be used in adults only. (5) It is dangerous in eye affections and often so in strumous children.

The cutaneous test of Von Priquet appears to be valuable in diagnosis in children. Of 68 children who reacted and died subsequently, 66 showed microscopic tubercles on post-mortem examination: one showed a pleuritic adhesion.

Detre, of Budapest, claims by the use of three different substances, (a) concentrated old tuberculin, (b) filtrate of culture of human bacilli, (c) filtrate of culture of bovine bacilli, to be able to differentiate the type of infection—whether human or bovine. His results, confirmed by others in Hungary, show that more than 90 per cent. of all pulmonary cases exhibit human reaction, whereas in visceral and surgical cases (adults) bovine reaction is demonstrated in one-third to one-half the cases.

Immunity and its Problems.—The discussion on this subject in Section 1 Thursday morning will repay anyone interested a careful perusal of the full report when it is printed. Baldwin reviewed past work in immunity production, showed that the tuberculins do not give true immunity, and that as yet we have not discovered the agent which will produce it. Living bacteria have produced a greater degree of immunity in experimented animals than dead bacilli or their products. One of the difficulties in their use has been the impossibility of regulating the dose, and this has necessitated the use of weak or non-virulent strains.

Prof. Barber (University of Kansas) demonstrated a method of giving subcutaneously one bacillus and of measuring any quantity of from one to one hundred or more. Using this technique, he had given mice an initial dose of 3 anthrax bacilli gradually increasing to 1,500 without causing any evidence of disease. Guinea pigs had been given 1 bacillus increased to 10,000, without symptoms to date. His further communications will be awaited with interest.

In Section 2 there was a general expression in favor of the

value of the tuberculins in treatment, particularly in chronic quiescent pulmonary tuberculosis, and in surgical tuberculosis. Many cases do not respond, and it is a very dangerous drug in careless hands. No man should use it unless he has the greatest respect for its potency. Beraneck, Denys and others whose names are well known in connection with the various tuberculins, spoke on the subject. The matter was well summarized by Trudeau in his paper, where he discussed the various methods of administration—roughly three: (1) Koch's, in which a local and focal reaction was to be secured; (2) Wright's, where the doses were small and only sufficient given to keep the opsonic index above normal; (3) that of Denys and Sahli, who give increasing doses and endeavor to establish a toxin (tuberculin) immunity. Trudeau follows the latter method and endeavors to reach, without producing reaction, a toxin tolerance, whether that be a fraction of a milligram or a cubic centimetre or more. This is reached by an almost imperceptible and long-continued progression in dosage. Focal and general reactions are to be avoided, considering them merely as evidences of intolerance.

Several papers were read on the value of the opsonic index in treatment of tuberculosis. Kinghorn and Twichell conclude that it is impracticable and impossible to use the test each day on a patient, yet it has been of value in showing that the intervals between doses should occasionally be longer than three or four days. It is of doubtful value to control tuberculin injections on phthisical patients.

Flick and Landis reported that the Maragham serum had not given good results at the Phipp Institute: in fact, had done harm in some cases.

The Relations of the Human and Bovine Bacillus.—Sections 1 and 7 discussed this together. Koch has no reason to depart from his statements made at the London Congress six years ago:

(1) The tubercle bacilli of bovine tuberculosis are different from those of human tuberculosis.

(2) Human beings may be infected by bovine bacilli, but serious diseases from this cause occur but rarely.

(3) Preventive measures against tuberculosis should, therefore, be directed primarily against the propagation of human tubercle bacilli.

It might be of interest to give here the principal part of Prof. Koch's address:

“All competent investigators agree that the tubercle bacilli of human origin differ from the tubercle bacilli of cattle, and that

consequently we must differentiate between a typhus humanus and a typhus bovinus. The British Commission also admits the existence of three differences, but as some of their cultures showed definite changes in their characteristics after passage through animals and various cultivations, they have differentiated a third group, which they call 'unstable.'

"As I have repeatedly emphasized, it is not of the slightest importance to us whether, after animal inoculation or breeding experiments, the tubercle bacillus is stable or unstable. What concerns us is behavior in the fresh condition. I am, therefore, unable to accept this third group of the British Commission, and I am satisfied with their admission that the fresh tubercle bacilli of the human type differ distinctly from those of the bovine type.

"The tubercle bacilli of the human type are characterized by the fact that they grow rapidly and abundantly in a thick layer on glycerin serum. They are virulent to guinea pigs, slightly virulent to rabbits, and almost non-virulent to cattle. The tubercle bacilli of the bovine type grow very slowly and in a thin layer on glycerin serum: they are of equally high virulence to guinea pigs, rabbits, and cattle. To my knowledge, the bacilli of the human type have never been demonstrated in cattle.

"The bacilli of the bovine type, on the other hand, can occur in man. They have been found in the cervical lymph glands and in the intestinal tract. With few exceptions, however, these bacilli are but slightly virulent for man, and remain localized. The few known cases in which the bovine tuberculosis is said to have produced a general and fatally progressive tuberculosis in man appear to me not to be above suspicion.

"In closing, I have still one point to discuss which seems to me of high importance. Of all human beings who succumb to tuberculosis, eleven-twelfths die of consumption, or pulmonary tuberculosis, and only one-twelfth of other forms of the disease. One would have expected, therefore, that those investigators who are interested in establishing the relations between human and bovine tuberculosis would have searched for bacilli of the bovine type preferably in cases of pulmonary tuberculosis.

"This, however, has not been the case. Evidently animated by the desire to bring together as many cases as possible of bovine tuberculosis in man, they have investigated particularly cases of gland and intestinal tuberculosis, and have neglected the much more important pulmonary tuberculosis. In spite of the bias under which the researches hitherto have suffered, there yet remains at our disposal a sufficient number of investigations

of pulmonary tuberculosis to warrant a provisional expression of opinion.

“The gist of it is—and I beg you to take note of it—that *up to date, in no case of pulmonary tuberculosis has the tubercle bacillus of the bovine type been definitely demonstrated.* If, on further investigation, it should be established that pulmonary tuberculosis is produced by the tubercle bacillus of the human type exclusively, then the question will be decided in favor of the view which I have upheld, and we must direct our regulations for combating tuberculosis by all means primarily against the tubercle bacilli of the human type.

“On account of the great importance of this question, I intend to undertake, as soon as feasible, experiments along this line on a broad scale. At the same time, I wish to make my plea to other tuberculosis workers that as many cases as possible may be examined to join with me vigorously in this task. But I wish to lay stress on the fact that the conditions laid down by me for the carrying out of these investigations must be followed. I consider it quite possible that, in this manner, the essential facts for deciding this important question may be collected in about two years, and be presented to the next International Congress.”

While Dr. Koch's views were greeted with profound respect, it was apparent before the next speaker, Prof. Theobald Smith, of Harvard University, had finished, that the great German scientist stood almost alone in his position. Prof. Smith, avoiding scientific and academic discussion, declared it had been demonstrated that half of certain kinds of tuberculosis in children, such as those of the glands of the neck and the abdomen, are due to infection from milk.

In the case of adults, Prof. Smith agreed with Dr. Koch that any regular or wholesale conversion of bovine into human bacilli in the human body is contradicted by most of the evidence presented.

Prof. Arlong, who followed, took sharp issue with Dr. Koch, declaring that, from the standpoint of hygiene, his experiments emphasized the unity and fusion of the classic types, and demonstrated the necessity of taking precautions against tuberculosis, whatever may be its origin, human or bovine.

Dr. M. P. Ravenel, of Madison, Wis., presented the question from the American point of view. He also opposed the ideas presented by Dr. Koch.

“On the correct solution of this question depends, no doubt,”

said Dr. Ravenel, "the health of many children, and even their lives, and I would consider it an extreme misfortune not only for this country, but for every country on the face of the earth, if any impression should go from this meeting that even the small proportion of deaths due to the bovine bacillus was a negligible quantity.

"I have inoculated repeatedly," added Dr. Ravenel, "the bacilli of the bovine type, absolutely characteristic in every respect to the human, and if not recovered in culture, if examined in the tissue, you will find them beaded and stained exactly like the human bacilli. I have also demonstrated that cows cough up sputum and distribute it exactly as human beings do, and in the sputum of such cows, I have demonstrated the tubercle bacilli exactly corresponding to the human body.

"One other thing has been proved through the work all over the world, namely, that the tubercle bacilli can pass through the intestinal wall and move through the mucous membrane of different parts of the body very rapidly without leaving any mark of its passage. Demonstrations have shown that inside of four hours, in fact, inside of three and a half hours, tubercle bacilli have passed from the milk of animals through the thoracic duct, and have reached the lungs in sufficient quantities to kill other animals inoculated.

"Having demonstrated that there are a certain number of cases due to bovine tubercular bacillus: that a certain number of deaths occur from this bacillus, and having demonstrated that the tubercular bacillus passes into the stomach, or gets there from some outside source, it behooves us from every point of view to take every precaution possible against contamination of our milk. I do not think it is possible, with our present knowledge, and it will be many years before we have sufficient knowledge to determine the number of cases due to bovine bacillus as compared to those due to the human bacillus. There can be no doubt, I think, that at the present time the human phthisis is the phthisis that we must look at for the first victims.

"*I cannot agree that the proportion of cases due to bovine bacillus is insignificant. It is an extremely important factor. I may call attention to the fact that to stamp out this disease both sides must be looked after. It is important to guard against tuberculosis in cattle, not only from the public health standpoint, but because it is a most serious economic question in every civilized country in the world, with one or two exceptions.*"

In opposition also to Dr. Koch was Dr. Nathan Raw, of Liverpool, who presented the views of the English delegates to the Congress. He contested vigorously the view that tuberculosis from cattle could not be conveyed to human beings.

"As a result of observation in hospitals of more than 5,000 cases," said Dr. Raw, "I am convinced that there are two distinct forms of the disease occurring in the human body. The first, or largest group, commonly called consumption, is caused by infection from person to person. The second group occurs chiefly in children, and is conveyed by tuberculous milk. I am convinced that when tuberculous cattle are eradicated, this latter type of disease will entirely disappear, but I am also convinced that consumption will only be stamped out by education, improved sanitation, and scientific treatment."

REST AND EXERCISE IN TREATMENT.

The clinical section was unanimous in their expression of the necessity of rest in treatment while there was a daily rise of temperature present. There was not a general agreement as to when exercise is advisable for patients, nor as to the amount of work to be prescribed. The general impression one received from the discussion was that, making allowance for cough, dyspepsia, anemia and other conditions, slight exercise is advisable when the temperature is normal, and when it does not rise as the result of exercise. All work, of whatever form, to be begun in great moderation, and increased very gradually, under supervision; that most apyretic patients are better for some daily occupation, whether manual or intellectual, but that the keynote to success is always in individualization.

Adaim and McCrea presented an analysis of 1,000 consecutive autopsies in Montreal. Of these, 417 (41.7 per cent.) showed tuberculosis past or present, as follows: (a) healed, 151; (b) latent, 93; (c) active, but slight, 22; (d) generalized, 43; (e) pulmonary (phthisis), 85; (f) bones, 12; (g) genito-urinary, 10.

At a conference of State and Provincial Boards of Health, Dr. Rosenan, of the Public Health and Marine Hospital Service, said: "I am strongly opposed to the manufacture and sale of vaccine virus and diphtheria antitoxin by private manufacturers. Diphtheria antitoxin is sold for from \$1.00 to \$1.50 per thousand units, or \$5.00 to \$7.50 for 5,000 units, the dose now usually given. It can be manufactured and sold at a profit at 25 cents per 1,000 units. The present price is an imposition

on the poor man." He recommended that each state and province make its own vaccine and antitoxin, and is satisfied they can make a purer quality.

THE FINAL RESOLUTIONS OF CONGRESS ARE :

Resolved. That the attention of the states and central governments be called to the importance of proper laws for the obligatory notification by medical attendants to proper health authorities, of all cases of tuberculosis coming to their notice, and for the registration of such cases in order to enable the authorities to put in operation measures for prevention.

That the utmost efforts should be continued in the struggle against tuberculosis to prevent the conveyance from man to man as the most important source of the disease.

That preventive measures be continued against bovine tuberculosis, and that the possibility of the propagation of this to man be recognized.

That we urge upon the public and upon all governments the establishment (1) of hospitals for the treatment of advanced cases of tuberculosis.

(2) The establishment of sanatoria for curable cases of tuberculosis.

(3) The establishment of dispensaries and night and day camps for ambulant cases of tuberculosis, which cannot enter hospitals and sanatoria.

That this Congress indorse such well-considered legislation for the regulation of factories and workshops, the abolition of premature and injurious labor of women and children, and the securing of sanitary dwellings as will increase the resisting power of the community to tuberculosis and other diseases.

That instruction in personal and school hygiene should be given by properly qualified medical instructors.

That colleges and universities should be urged to establish courses in hygiene and sanitation, and also to include these subjects among their entrance requirements in order to stimulate useful elementary instruction in the lower schools.

That the Congress indorse and recommends the establishment of playgrounds as an important means of preventing tuberculosis through their influence upon health and resistance to disease.

611 Spadina Avenue.

Book Reviews.

DISEASES OF THE INTESTINES AND PERITONEUM. New (2nd) edition, revised. By Dr. Herrmann Nothnagel, of Vienna. Edited, with additions, by H. D. Rolleston, M.D., F.R.C.P., Physician to St. George's Hospital, London, England. Octavo of 1059 pages, illustrated. Philadelphia and London: W. B. Saunders Company. 1907. Cloth, \$5.00 net; half morocco, \$6.00 net. Canadian agents: J. A. Carveth & Co., Limited, Toronto.

The above volume is a further addition to the series of monographs edited by Nothnagel. It is in every respect in keeping with the earlier works, which are so well known that criticism is unnecessary.

The first part deals with diseases of the intestines, which have been approached from every standpoint, the symptomatology, functional disorders, neuroses, anomalies in form and position, internal hernia, occlusion, ulceration and neoplasms are all dealt with in the fullest practical manner. Following this the peritoneal lesions are taken up: ascites, tumors and the acute and chronic inflammatory changes are all fully discussed. The volume is illustrated with a number of excellent plates. Both the paper and type used are of the best. To readers of former volumes this one needs no recommendation.

DISEASES OF THE NERVOUS SYSTEM. By H. Campbell Thompson, M.D. (Lond.), F.R.C.P., Physician to Out-Patients at Middlesex Hospital; Dean of and Medical Tutor in the Middlesex Hospital Medical School; Physician to the Bolingbroke Hospital and to the Hospital for Epilepsy and Paralysis, Maide Vale. London, Paris, New York, Toronto, and Melbourne: Cassell & Co., Limited. 1908.

We have before us a neat work of some 400 pages, profusely illustrated, and of such a size as to appeal to both medical practitioner and student, not too profuse for the latter, yet taking up subjects under discussion at sufficient length to satisfy the former. In the first section, the chapter on reflexes is clear and concise. Disease of peripheral nerves are then discussed, the cranial nerves in numerical order, followed by the cervical sympathetic, upper and lower limb paralysis, the last chapter dealing with multiple neuritis and neuromata.

In Section II. the myopathies and in III. the organic diseases of the cord are dealt with; the cerebral lesions are in the following section, while the remainder of the work, over 100 pages, is devoted to functional and general nervous lesions.

Throughout the text is clear. The practical side of the subject has been emphasized throughout, little space being devoted to theory. We think the portions dedicated to diagnosis will be of the greatest service in actual practice. Finally, we notice with particular pleasure the chapter on cerebral localization.

WOMAN. A treatise on the normal and pathological emotions of feminine love. By Bernard S. Talmey, M.D., Gynecologist to the Metropolitan Hospital and Dispensary, New York. For students and physicians of medicine. With 22 drawings in the text. Published by the Stanley Press Corporation, New York.

The author, in his preface, declares that he "Had to go fishing in the sea of medical and philosophical literature, and whole days long sitting on the shore patiently wait for a single bite in order to prepare a palatable and easily digestible mental dish for the busy practitioner among women."

We find our "mental stomach" utterly unable to assimilate this "medico-philosophical treatise."

THE OPHTHALMIC AND CUTANEOUS DIAGNOSIS OF TUBERCULOSIS (the Cutaneous and Conjunctival Tuberculin Reactions, according to V. Pirquet and Wolff-Eisner) together with a discussion of the Clinical Methods for the Early Diagnosis of Pulmonary Tuberculosis, by Dr. Alfred Wolff-Eisner; a preface by Professor H. Senotar, and an introductory note to the English reader by C. Theodore Williams, M.V.O., M.D., F.R.C.P., Consulting Physician to King Edward VII. Sanatorium and the Brompton Hospital; Vice-President of the International Central Bureau for the Prevention of Consumption; Vice-Chairman of the National Association for the Prevention of Consumption). Translated from the German by Bernard I. Robert; with 2 colored litho. tables, 11 curve tables, 15 reproductions, and numerous curve figures in the text. Published in London by John Bale, Sons, Danielsson, Limited, 83-91 Great Titchfield Street, W. 1908. Copyright. All rights reserved.

The author, in the introduction, finds that he is "obliged to protest against the ophthalmic reaction being frequently designated in Germany and France as "Colmette's test." He brings forward certain points which, from the point of view of an impartial observer, certainly show that he is entitled to the full credit of the onerous work undertaken, as that at the least he should receive equal recognition. The work is of such undoubted value that no practitioner, certainly no one who is engaged in medical teaching, should be unacquainted with its contents. The conclusions are clearly put forward, the author fully recognizing that the reaction is not infallible, and what is more, the opinions of many of Wolff-Eisner's co-workers' observations and opinions are also individually quoted.

Not only are the cutaneous and conjunctival reactions treated, but in the last chapters cyto-diagnosis, thermametry, the streak diagnosis method and others have been treated, thus greatly enlarging the practical value of the work.

We beg to extend our hearty commendations to W. Wolff-Eisner on his excellent monograph.

PSYCHOLOGY APPLIED TO MEDICINE. Introductory studies by David W. Wells, M.D., Lecturer on Mental Physiology, and Assistant in Ophthalmology, Boston University Medical School; Ophthalmic Surgeon, Massachusetts Homeopathic Hospital, Boston. Philadelphia: F. A. Davis Company, publishers. 1907.

In these days, when we have so many examples of faith cure, it is absolutely necessary that the medical man should thoroughly understand the rationale of the treatment, should be able to select proper cases, and to apply psychology therapeutically when necessary. To facilitate this, Dr. Wells has prepared a little volume which we can heartily recommend. It covers the subject lucidly and well, and puts suggestion in its proper place in the practice of medicine.

HAY FEVER, HAY ASTHMA, ITS CAUSES, DIAGNOSIS AND TREATMENT. By Wm. Lloyd, F.R.C.S.: Fellow Royal Society of Medicine; Surgeon-in-Charge of the Nose, Ear and Throat Department, Kensington General Hospital, etc. Second Edition. London: Henry J. Glaiser, 7 Wigmore St., Cavendish Square W. 1908.

In a small book of 100 pages, the author has told as much as is known of the etiology, pathology and treatment of a disease that is the *bête noir* of the medical profession. It is very interesting reading, and very helpful to everyone in general practice.

PROGRESSIVE MEDICINE. a Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart A. Hare, Professor of Therapeutics and Materia Medica in the Jefferson Medical College; assisted by H. R. M. Landis. Vol. III. Sept. 1, 1908. Lea & Febriger. Philadelphia and New York. \$6.00 per annum.

This number contains articles on diseases of the thorax and its viscera, including the heart, lungs and blood vessels, by Wm. Ewart; on dermatology and syphilis, by Wm. S. Gottheil; obstetrics, by E. P. Davis, and the nervous system, by W. G. Spiller. This volume is thoroughly equal in every way to the others of their year. We cannot too emphatically state its importance to the general practitioner, as well as to the specialist.

A TEXT-BOOK OF HUMAN PHYSIOLOGY, THEORETIC AND PRACTICAL. By Geo. V. N. Dearborn, A.M., Ph.D., M.D.; Professor of Physiology in the Medical and Dental Schools of Tufts College, Boston. Illustrated with 300 engravings and plates. Lee & Febriger, Philadelphia and New York. 1908.

Written primarily for medical and dental practitioners and students, this work is so concise, and withal so readable, that it must find a good place among the host of text-books on physiology. The chapters on Diet and on Metabolism are better than anything else we have read, outside of monographs. Dr. Dearborn has drawn less freely than most American authors from other text-books, and has avoided some mistakes. But we find, on page 187, that he repeats the statement, which began with Dr. Beaumont, that the introduction of any solid substance into the stomach causes a flow of gastric juice. Pawlow proved this to be false more than ten years ago, and it is time it began to be dropped in students' hand-books.

Miscellaneous.

"Don't Give Up the—Patient.

A strong, healthy optimism is the physician's greatest asset. We have always been advising the doctor to be exceedingly careful about giving gloomy, hopeless prognoses. We do not know it all, and occasionally an apparently hopeless patient does recover. We have given some examples in a previous editorial. A very striking example is given by Prof. W. S. Thayer, of Baltimore, in his oration on medicine at the recent meeting of the American Medical Association.

A few years ago he had under his care a patient who had one tuberculous kidney removed some years before. She had then *bilateral pulmonary tuberculosis, tuberculous pleurisy, tuberculous peritonitis* and *tuberculosis of the remaining kidney*. The temperature for weeks had been constantly elevated, the pulse rapid and feeble. She seemed *in extremis*. Had the doctor been asked, he would have said that she had probably a few weeks to live. She asked calmly if she were going to die or whether there was any chance of recovery. He answered her truly that she was very ill, that the outlook was not good, but that there was always a chance for an arrest of the disease, and that it would be wrong to even think of giving up the fight. For two years that patient has been free from fever, to all outward appearances well, and to-day she is actually working for her living.

Dr. Thayer is right in saying that truthfulness in medicine does not mean that it is always necessary to tell the patient that he has a fatal disease if he does not ask you the direct question. Nor does it forbid the physician to seek and keep his eye fixed on the cranny of hope, which may usually be found, as earnestly and sedulously as would the patient himself.

For nothing is certain in human life, and—*errare humanum est*.

At any event, in medicine it is always better to be too optimistic than too pessimistic.—*Critic and Guide*.

Occupation and Mortality.*

The recent triennial report of Dr. Tatham, Registrar-General, for the three years ended 1902, has furnished a blue-book of more than ordinary interest. For the first time for many years it gives a comprehensive official return of the particulars of occu-

* Read at the Annual Meeting of the American Hospital Association, Toronto, September 30th, 1908.

pational mortality in England and Wales. As might be expected, the general conclusions are written in plainest type in the extremes of the list, which record the highest and the lowest average mortalities. The terrible adverse influence of alcohol upon the length of life is once again illustrated in a striking manner. Brewers exceed the average standard mortality figures by 10 per cent., their deaths being excessive under every heading except that of accidents. The direct effects are registered by a mortality from alcoholism and liver disease of three times the standard. Curiously, the excess from cancer in their case amounts to 75 per cent., a point that is worthy of careful consideration in the investigation of that disease. Indirectly, brewers suffer more severely than the average from intercurrent disease, such as influenza, and there is a marked excess in the fatality from phthisis, from diseases of the circulatory and respiratory systems, and from Bright's disease. As might be expected, these results are greatly multiplied in the case of the publicans, who between the ages of 25 and 65 years show a higher mortality than any other section in what is euphemistically spoken of as "The Trade." Under the heading, "Alcoholism and Liver Disease," the mortality is no less than seven times the standard, while from Bright's disease it is $2\frac{1}{2}$ times the average; from influenza, phthisis, and diseases of the nervous system there is an excess of 70 per cent., and from diseases of the circulatory and respiratory systems it is somewhat under 50 per cent. The excess of cancer amongst the brewers is to a certain extent discounted by the maintenance of an average standard amongst the publicans, possibly because the latter are the shorter-lived, and succumb at an earlier period to other maladies. Suicide, again, shows more than twice the average of all occupations. The brunt of the sacrifice in the ranks of "The Trade" falls upon the inn-servants, the excess being most marked under the heading of phthisis. Their mortality is greater than that of the publicans from cancer, from circulatory and respiratory diseases, from alcoholism apart from liver disease, and from accident; but from all other causes the servants suffer less than the masters. Emerging from these dismal facts, however, is the ray of light visible in the statement that the figures show a distinct improvement upon those of previous years. In other words, persons engaged in the drink trade have shared in the general diminution of the death-rates of the country. Turning to the opposite extreme, we find that among the professions the clergy of all denominations easily take the first place. Between the ages of 25 and 65 they furnish a comparative mortality of 524

(as against 1,000), a result lower than that of any other except occupied farmers and other agriculturists in selected districts; while the proportion living at all ages above 65 enormously exceeds the average. Lawyers and barristers come next, and die less rapidly than medical men at all stages of life. The comparative mortality figure of the medical profession is 952. Turning to other occupations, we find much food for reflection in Dr. Tatham's figures. On the whole, the mortality from phthisis has continued to decline steadily. Among woollen manufacturers, potters, stone quarriers, and coal miners in various parts of England and Wales, there has been a marked decrease, as well as a considerable fall in the general mortality from respiratory disease amongst drapers, ironstone miners, printers and potters. It is interesting to note that even clergymen and farmers shared the general fall in phthisis mortality, although previously they had shown an extremely low mortality. The exceptions were found in messengers, menservants, tanners, lace and hosiery workers, lead workers and costermongers, amongst whom the phthisis mortality has been practically stationary; and general shopkeepers, cutlers, ironstone, copper and tin miners, general laborers, manservants in industrial districts and unoccupied males, amongst whom it has considerably increased. Another somewhat disquieting set of facts relates to alcohol. Amongst the occupations which in earlier reports were shown to be addicted to alcohol, all reappear in the present report except the hair-dressers, whose mortality from that cause has decreased by half. Among paper-hangers and wood-turners the mortality from alcoholism has shown a considerable increase, and to a less extent among the newly-introduced occupations of messengers, lead workers, tobacconists, general laborers and general shopkeepers, amongst each of which classes the particular mortality in question has substantially increased, and is now more than double the standard. In many ways Dr. Tatham's report constitutes a supplement of great statistical value to the sixty-fifth annual report of the Registrar-General.—*Medical Press and Circular*.

Opium Consumed in the United States.

During the past four years, 1903-1907, there were imported into the United States 2,436,771 pounds of crude opium (containing 9 per cent. or more of morphine), 783,258 pounds of chandu or smoking opium, and 59,000 pounds of morphine. It is estimated that from 60 to 75 per cent. of this opium is manufactured into morphine, and that 50 to 90 per cent. of the mor-

phine so manufactured is used illicitly. The habitual use of morphine is steadily becoming a national scourge. Our Chinese population is smaller than it was twenty years ago, still we are importing more than twice the amount of smoking opium than was imported then. Similar conditions exist in England, the country which, for her own commercial gain, against the entreaties and remonstrances of China, fastened the opium habit upon the Orient, and which now finds itself becoming a victim of the same curse and its chickens coming home to roose.—*New York State Journal of Medicine*.

The Treatment of Tabes.

This paper is devoted to the value of the mercurial treatment of *tabes dorsalis*. The prophylactic action of mercury is strongly emphasised. It is true that many have asserted that the mercurial treatment of syphilis predisposes to tabes, but there is very little evidence in support of this, and Fournier's statistics disprove it, as a considerable proportion of his cases of tabes were never treated by mercury, and of the others the proportion diminished with the increased duration of the mercurial treatment.

The author believes that occasionally complete cure of tabes may be achieved by rigorous mercurial treatment, and cites a few cases in support of his belief; but these are not critically selected and many of them are certainly open to doubt. But if complete cure is rare, it is certainly not uncommon to see the disease at least arrested by mercurial treatment; the author asserts that in none of a dozen cases treated by him in this way during the past six to eight years has the disease progressed or new symptoms appeared, while several of the patients have improved.

Finally, it is pointed out that, in some cases the shooting pains and paresthenia are favorably influenced by anti-syphilitic treatment, though in others the administration of mercury seems to increase or bring on the pains.—*Milan-Progress Med.—Med. Chronicle*.

Treatment of Bronchopneumonic Catarrh.

A. Ferrata and A. Golonelli, of the Medical Clinic of the University, Parma, report upon the results of styracol therapy in bronchopneumonic affections, which were observed in the clinic of the University of Parma during three years. It can be stated with certainty that styracol, which is a guaiacol preparation, shows a decided influence upon the mucous membranes of the bronchi. After the use of styracol the night-sweats will