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THE LATE GLASGOW, EDINBURGH AND BELFAST EPIDEMIC OF CEREBROSPINAL MENINGITIS

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IN discussing epidemic cerebrospinal meningitis under the above caption one does so in that this is one of the latest of the large epidemics of this disease; and from such careful observers as Robertson, of Leith, Chalmers, of Glasgow, and Robb, of Belfast, one should obtain the latest word.

This epidemic showed itself first in Glasgow in March of 1906, being observed chiefly in the poorer and more congested areas of the north and east wards.

In August, the Medical Health Board took action under the Infectious Diseases Act, making compulsory the notification of this malady. During the later months of 1906 a few deaths from cerebrospinal meningitis were reported in Edinburgh and Paisley. In January of 1907 the disease broke out in Belfast and the epidemic was so severe in type that Belfast followed the example of Glasgow in making the disease notifiable for one year. In the end of December, 1906, and January, 1907, cases were reported in Leith, which is the port of Edinburgh. These cases appeared in bunches, sometimes days together passing without a case reported, to again have 9 or 10 reported within 24 hours.

The severity of the epidemic may be estimated from the following table. For the data of this table I am indebted to the Department of Statistics in the office of the Registrar-General of Scotland.

Deaths from cerebrospinal meningitis in eight of the principal

towns of Scotland, 1906-1908. These data, unfortunately, give the death rate only and from these the number of cases can only be surmised:

	GLASGOW.	EDINBURGH.	DUNDEE.	ABERDEEN.	PAISLEY.	LEITH.	GREENOCK.	PERTH.
Population, 1907.....	847,584	345,747	165,748	174,579	88,710	83,668	71,269	34,866
1906—May	5	..	..	..	..	..	..	..
June	27	..	..	1	..	..	..	..
July	23	..	..	..	..	..	..	..
August	21	..	1	..	..	..	..	..
September ..	11	..	1	..	2	..	..	..
October	15	1	..	..	1	..	..	..
November ..	26	1	..	..	1	..	..	..
December ..	19	1	..	..	..	..	..	..
Totals.....	147	3	1	1	4	..	..	..
1907—January	66	5	..	..	1	2	..	..
February ..	111	13	3	..	8	5	..	..
March ..	135	19	2	..	5	16	2	..
April	112	38	6	..	..	18	3	..
May	96	14	8	..	5	19	1	..
June	52	21	1	..	2	6	..	..
July	37	14	1	..	1	8	..	..
August	30	5	4	1	3	3	1	1
September ..	29	8	4	1	1	1	..	..
October	19	6	..	..	1	2	1	..
November ..	14	2	1	..	1	2	1	..
December ..	10	3	..	1	2	4	..	..
Totals.....	711	138	30	3	30	86	9	1
1908—January	15	7	2	..	..	..	2	..
February ...	22	4	1	1	3	2	..	..
March	18	3	..	..	2	4	..	..
April	20	2	1	..	..	4	1	..
May	13	2	1	..	..	1	..	..
June	7	1	..	..	..	..	1	..
July	15	1	..	..	..	2	..	..
August	13	5	1	..	..	..	..	..
September ..	11	1	..	1	..	..	1	..
October	8	..	..	..	..	..	..	..
November... 5	..	..	..	..	..	..	..	..
Totals.....	147	26	7	2	5	13	5	..

In Belfast, the epidemic commencing in January, 1907, lasted to June, 1908, during which time 725 cases with 548 deaths were reported, thus giving a mortality of 75.4 per cent.

It is of interest to note the death rate for the following cities:

Glasgow	1 in approximately	845
Edinburgh	1 "	2,000
Dundee	1 "	5,000
Aberdeen	1 "	35,000
Paisley	1 "	2,500
Leith	1 "	840
Greenock	1 "	5,000
Perth	1 "	35,000
Belfast	1 "	600

Thus indeed may be summed up succinctly the statistics of the epidemic. It remains now to sum briefly the observations made by various investigators during the epidemic.

Drs. Iver MacKenzie and W. B. Martin found the diplococcus intracellularis in the throat and nose of many cases of cerebrospinal meningitis and contacts in Glasgow. Frequent post mortem sagittal sections of the skull failed to reveal any direct extension of the disease from the nasal passages to the meninges. The organisms were found to be causative in two cases of malignant endocarditis and were present as a pure culture in the pericardium, the pleurae, the spleen and the joints, and were even found in the urine. Dr. Symmes, of Belfast, found in 15 blood cultures from cases of cerebrospinal meningitis the meningococcus to be present three times. It is of interest to collaborate the findings of Drs. Mackenzie and Martin with those of Dr. Kerchner on an epidemic, and Dr. Flexner in experimental work.

Dr. Kerchner found in 635 cases of cerebrospinal meningitis the diplococcus to be present in the naso-pharyngeal areas 146 times, and in 213 contacts it was present 26 times.

Dr. Flexner, in experimental cerebrospinal meningitis produced by the injection of the diplococcus intracellularis into the spinal sac of monkeys, found the infection to spread outward to the frontal sinuses by the olfactory lobe and membrane, and even the nasal mucous membrane to become congested.

Dr. Symmes found in post mortem examination, held by him in Belfast, on cerebrospinal meningitis cases, an intestinal hyperemia, enlarged markedly hyperemic or hemorrhagic mesenteric glands, a peculiarly yellow mottled surface of the liver, enlarged thymus gland, and a general prominence of lymphatic tissue. Similar post mortem conditions were, however, produced in a monkey by Dr. Stuart MacDonald, by injecting into its spinal cord the spinal fluid from a case of cerebrospinal meningitis.

Drs. MacKenzie and Martin found the blood to exert a markedly bactericidal action upon the meningococcus, while the serum of the cord showed very little such action indeed. So marked indeed was the difference that these two investigators used the blood serum of convalescent patients to inject into the meningeal sac of those in the acute stage, and in 14 unselected cases had 8 recoveries with 6 deaths. In two other acute cases they injected the serum from the patient himself into his own meningeal sac with recovery in both cases.

The above evidence goes to show that in Dr. Kerchner's statistics 23 per cent. of the cases give presumptive evidence of the source of infection being the naso-pharyngeal areas. The evidence, however, is that the course of infection is not by continuity of tissue to the meninges, but rather that the disease is a general

one of the body carried by the blood, and one against which the blood is a marked defence, so that the areas attacked are those not immediately protected by this defence.

Flexner has shown by laboratory experiment that the meningococcus has a very marked autolytic action. Such an action coupled with the bactericide action of the blood (as shown by Drs. MacKenzie and Martin) should give a very low range of infection. Such, indeed, is the condition observed by Dr. Chalmers, of Glasgow, who says: "(1) Under average conditions the disease is possessed of a limited range of infection. (2) That it spreads in the majority of instances through the agency of an intermediary analogous to a carrier case in diphtheria. (3) The malady under conditions which tend to produce an impurity in confined spaces is capable of assuming the characteristics of a true air-borne disease, such as typhus or measles, and then to attack a considerable number of persons breathing the air. None of the staff of the hospitals or nurses were infected." Dr. Archibald, one of Dr. Chalmers' assistants, however, was attacked six days after visiting a house in which the disease was present and in which the conditions were particularly filthy.

Dr. Robb, of Belfast, reports the disease as but slightly infectious in character, none of the hospital staff or nurses contracting the malady. As an example of its low infectivity, he quotes the following cases: Three mothers were admitted to nurse their infected infants and remained healthy themselves; two infected mothers were admitted with their nursing infants and both children remained healthy.

So much for the evidence and lack of evidence of the process of infection within the body.

Dr. Robertson, of Leith, has very admirably worked out some extra-corporal processes of infection in this epidemic. Dr. Robertson points out that Leith is the seaport town of Edinburgh, and that the shipping to Leith carries large numbers of Polish, Russian, German, Italian, Bulgarian and other immigrants from Rotterdam, Antwerp, Hamburg, and Copenhagen en route via Glasgow to America.

The first cases of cerebrospinal meningitis in Leith occurred in the families of dock laborers, and an examination of the laborers themselves frequently demonstrated the meningococcus in their noses. It was demonstrated that in five separate houses in which cases of cerebrospinal meningitis occurred the fathers of the families worked in the hold of the same vessel, which was in dry dock. From the engine room of this vessel meningococci were developed in Petri plates. A ship steward coming in contact with the crew of this vessel developed C.S.M. and died. The railway clerk, whose duty it was to look after the entraining of these trans-

migrants, developed the same malady and died. The daughter of a customs house officer also developed the disease and died. The dock laborers, having very irregular employment, congregate in the grounds about the docks, and not being permitted to smoke, chew tobacco very freely; the expectorations from any infected intermediary thus became very profuse and would in time produce a large probability of infection from the dust of these places, and Dr. Robertson points out that the epidemic was most severe during the dry, windy weather of March and April. One would, however, think this frequency of disease should also be estimated against the frequency of the transmigrant traffic and the source of the transmigrants. In Leith there were: Of 1-roomed houses, 15 infected; of 2-roomed houses, 44 infected; of 3-roomed houses, 11 infected; of 4-roomed houses, 3 infected; of 5-roomed houses, 2 infected; of 6-roomed houses, 1 infected. In these 1 and 2-roomed houses the sanitary conditions were very poor, the food being left upon the table and exposed to infection. So impressed was Dr. Robertson with the possibility of the infection passing by the food from infected persons that the city of Leith destroyed all food thus exposed and replaced it by unexposed food and insisted on proper protection of the food thus supplied. Drs. Fowler and Stuart MacDonald, of Edinburgh, deem the infection to be carried by the food for the following reasons:

1. The cord tension is of longer standing than that of the brain.

2. The abolition of abdominal reflex suggests spinal involvement.

3. The retention of the mental faculties is in many cases characteristic, thus indicating a later involvement of the brain.

4. That no exclusively breast-fed infant has, to their knowledge, been attacked by this disease.

In further evidence of the source of infection being the transmigrants, it is of interest to refer to the death rate in the towns previously quoted, Glasgow, 1 to 845; Leith, 1 to 840; these being the most intensely infected areas. Following these are Edinburgh and Paisley, with one to two thousand and to 2,500 respectively, these towns being of the poorer working people and in the close vicinity of Leith and Glasgow. Greenock and Dundee, with each one to five thousand, while Aberdeen and Perth, towns away from the route of transmigration, had a death-rate of only one to thirty-five thousand.

The method of control followed by Dr. Robertson was as follows: 1st. Remove the patient to the hospital. 2nd. Spray with formaldehyde the rooms of the infected house, the passage-way, courts and side-walks even, pertaining to the house, and as the most important step of all, douch the noses of all contacts with chlorine water every second day until the douching has been car-

ried out three times. This was done by district nurses, who at the same time supplied the contacts with formamint tablets.

In addition to this, as has already been stated, exposed food was replaced by unexposed food.

Of the treatment of C. S. M., in this epidemic, much valuable information has been accumulated by Dr. A. Gardiner Robb, of Belfast. Of the 275 cases coming under his care in the Fever Hospital of Belfast, the death-rate was 72.3 per cent.; of these 69 were treated with hypodermic injections of Colli Wasserman's, Ruppel's, Burroughs and Wellcome's antimeningitis serum, with a death-rate of 74 per cent. He then commenced the intrameningeal infection, Flexner's and Jobbling's serum, and in 94 unselected cases had 25 deaths or a mortality of 29.7 per cent. All the cases quoted by Dr. Robb were verified by Prof. Symmes and Dr. Wilson, and by Drs. Houston and Rankin at the laboratories of Queen's College.

Dr. Robb made hypodermic injections of this serum in several cases and in none did he find any marked effect to follow its use. The difference of the action of the Flexner and Jobbling serum when injected into the spinal meninges and hypodermically is of great interest when correlated with the results obtained by Dr. Iver Mackenzie and Dr. Martin in injecting into the meningeal sac the serum of a patient recovering from C. M. S., or even by serum of the patient himself. Drs. Mackenzie and Martin found the result to be 6 deaths in 16 unselected patients, or 37½ per cent. It is regrettable that the series of cases by Drs. Mackenzie and Martin are so limited, for the results so far as they go are very encouraging indeed.

But to return to the Flexner and Jobbling serum, of which a larger series of results are available, and which shows a less mortality. One can scarcely do better than to quote Dr. Robb's summary of the results as they now stand:

Looking back over our experience two points stand out as completely altering the view we must now take of cerebrospinal fever compared with the outlook when the disease first came upon us.

1st. Houston and Rankin's opsonic and agglutination method of diagnosis was an enormous stride, and is most reliable.

2nd. Flexner and Jobbling's serum completely changes the mortality. From my experience in treatment I am satisfied that we have no more definite and specific remedy for any disease, not even excepting anti-diphtheria serum, although the field of usefulness is more restricted.

The instruction which may be gathered from the observations upon this epidemic might be summed up as follows:

1st. That the most dangerous source of infection is found on the line of transmigration of the European immigrants.

2nd. That when the disease becomes established in a city it is most prevalent in small, over-crowded rooms.

3rd. That the disease is of low infectivity.

4th. That the infective organism enters the body probably by two routes, (a) the naso-pharyngeal area, and (b) food and swallowed secretions taken into the gastro-intestinal areas. The actual infection by either of these two sources has not been fully demonstrated.

5th. That the infection is a general systemic one and does not invade by a continuity of tissue.

6th. That the blood has a powerful bactericidal action on the germ of disease and the organism is possessed of a marked autolytic action.

7th. That the cerebrospinal fluid has little or no bactericidal action, and because of the absence of blood serum the cerebrospinal membranes and cavities are the vulnerable areas of attack.

8th. That the human blood serum injected into the meningeal sac greatly retards the progress of the disease and greatly lessens the mortality of the malady. The statistics, however, are yet meagre, and such treatment must be regarded as one to be used only in the absence of the Flexner Jobbling serum.

9th. The Flexner Jobbling serum injected hypodermically does not affect the course of the disease, but injected into the meningeal sac it has a specific action in greatly modifying the course of the disease and very greatly lessens the death rate.

10th. That the agglutination test is after six days of illness a valuable and reliable one.

The prophylactic methods indicated are:

1st. The isolation of those who are ill and the disinfection of their naso-pharyngeal tracts with chlorine water.

2nd. A similar isolation and disinfection of all contacts.

3rd. The copious disinfection with formaldehyde of all rooms and areas frequented by those ill with disease or by contacts.

4th. The destruction of all food exposed to infected persons, whether ill or contacts; all further food provided should be properly protected in infected houses.

5th. The last and by no means least necessary precaution is the thorough and frequent disinfection of all cars carrying European immigrants or cars carrying passengers from infected areas.

In closing I wish to acknowledge with thanks the courtesy of the Department of Statistics in the Office of the Registrar-General of Scotland in placing at my disposal the statistics of the Scotch epidemic and also the courtesy of Dr. A. Gardiner Robb, of Belfast, in sending me the statistics of the epidemic of that city, together with his own statistics of the results following the use of the Flexner Jobbling serum.

MILK EPIDEMICS*

BY J. FLEMING GOODCHILD, M.D., M.R.C.S. (ENG.), B.SC., PUBLIC HEALTH (EDIN.).

THERE is now no question of the fact that numerous epidemics of enteric fever, diphtheria, cholera, sore throat and scarlet fever have occurred in which milk has been the medium of conveyance and multiplication of the specific microbes.

In the case of typhoid fever the organism has gained entrance to the milk either by adulteration of the milk with water containing the bacillus of Eberth or by washing the milk vessels with similarly befouled water, and in a few cases it has been found that the only source of contamination was from a person who had milked the cows with hands soiled with dejecta of patients suffering from typhoid. Another means is the case of the udder of the cow becoming fouled with water containing the typhoid bacillus.

In a large percentage of milk epidemics of diphtheria it has not been possible to trace the source from which the milk derived its infective quality. This, however, is not to be wondered at, for in the first place our knowledge is not yet sufficiently definite to enable us to exclude diphtheria from the class of diseases which are not necessarily dependent on an immediate pre-existing case, and which appear to arrive at times from ordinary insanitary conditions. And in the second place, slight cases of diphtheria are very difficult to trace—the diphtheritic character of a sore throat not always clinically being recognizable by doctors, and in these mild cases a careful bacteriological examination is not always made. Notwithstanding this, we need not hesitate to say from the abundant evidence now existing that diphtheria has often been conveyed through the medium of milk.

In the case of sore throat, certain diseases of the cows themselves, and especially of the teats and udder, have been found to act as a primary cause, but this has really nothing to do with milk as a vehicle for conveyance of infectious diseases.

A good example of an actual case of cholera being conveyed by the medium of milk is that reported by Dr. Simpson: An outbreak of cholera occurred on board the ship "Arden Senta," lying off the port of Calcutta. Of the crew of this ship all those who drank milk brought by a native milkman suffered. This milk vendor was found to have his dairy near a tank into which dejecta from a cholera patient was thrown. He confessed to have

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habitually diluted the milk one part in four with water from this tank.

In those epidemics of scarlet fever which have been traced to milk it has been usual to find that the milk was infected through human agency by a previous inadequately isolated case of scarlatina at the farm or dairy. The cows were either milked by a person who was attending on a scarlet fever patient or by one who had the disease in his family, or by one who was himself suffering from scarlet fever in a mild or disguised form, and occasionally the milk appears to have derived its infective quality from being kept in a room in which clothes or refuse matter from the sick had not been disinfected.

There is no evidence of this disease being conveyed by water nor by the air, inasmuch as it does not appear to spread in the neighborhood of fever hospitals, and at present there is little evidence to show that this disease has any definite relation to the soil.

In Britain, even before the year 1881, numbers of scarlet fever milk epidemics occurred and were described by Ballard, Buchanan, Jacobs, Robertson, Darbishire, and many others. In the transactions of the International Medical Congress, 1881, Mr. Ernest Hart tabulated these, giving particulars of 50 epidemics of enteric, 15 of scarlet fever, and 6 of diphtheria, including in all some 4,800 cases of infectious disease all traced to an infective or supposed infective quality of the milk, and since that date numerous other epidemics have occurred in which milk has been the vehicle of conveyance of the infection.

In the United Kingdom these milk epidemics are now so easily recognized, since the classical investigations of Ballard and Buchanan, that there is hardly a health officer in the country who has not had the opportunity, even during a comparatively few years of office, to himself investigate and become acquainted with such epidemics. As evidence of the truth of this statement, let me cite my own experience during a year's work, 1900-1901, as assistant to Dr. A. K. Chalmers, M. O. H., Glasgow. During that year there were two milk epidemics of scarlet fever that came under the notice of my chief and I personally, along with another assistant, Dr. Knight, now M. O. H., Scarborough, was instrumental in working out and finding the source of infection in one of these. In this epidemic we found in the Gorbals district of Glasgow quite a large number of scarlet fever cases occurring almost simultaneously in different and distant households, these, in most instances, having no intercommunication with one another, either by school, church or visitors. These sporadic cases appearing with no definite source for infection from other scarlet cases led us to think at once that the milk supply was the vehicle of the con-

tagion. In this particular instance we found (as nearly as I can remember) that upwards of 50 cases of scarlet fever had developed within two days, and in almost every one of the first cases we traced the milk supply through several different city milk vendors back to one common source of supply—a dairy farm in Lanarkshire, where a family had suffered from scarlet fever and one of its members had continued to work in the dairy, while suffering from a mild type of the disease.

Another good example of a scarlet fever epidemic caused by a contaminated milk supply, is that reported by Dr. Robertson, of Keswick. In this instance the contagion had found access to the milk of a dairy closely adjoining a house where scarlet fever had existed for several weeks. The cows were milked every night and morning into open pails, the milk carried across an open yard past the affected household. The children who first contracted scarlet fever in the locality played about the yard while in a state of desquamation. Very shortly afterwards a general epidemic of scarlet fever broke out in the town, and in two days upwards of 30 to 40 families became sufferers from the disease. All those that contracted the disease received their milk supply from this particular dairy. Some members of every family supplied became infected almost at the same time, practically all the same day, with either a scarlatinal sore throat or scarlet fever. Other families supplied from a different source escaped the disease. A lodger with one of the unfortunate families took the raw milk for supper and contracted the disease. His landlady drank boiled milk from the same sample, and she escaped the disease.

We must here observe the large number of scarlet fever cases occurring on the same day. The inference from this fact is that a day or two previous to this outbreak the children, while playing in the yard, had in some way conveyed the infection to the milk in their neighborhood.

In 1885 an epidemic of scarlet fever occurred in Postock, Germany, apparently from milk infection. A very striking increase in scarlet fever occurred in June, in which month 36 cases developed. It was discovered that the families (with two or three exceptions) were supplied with milk from a farm in the village of Gehlsdorf, where six cases of scarlet fever and a number of cases of sore throat existed among the farmers' families and employees. Some of those who were taken ill had milked the cows and had handled the milk. According to the investigation of the Postock physicians, eight of the thirty-six cases could, with certainty, be attributed to infection from the milk. As indicating the presence of the infecting agent in the milk, it was noted that those who drank boiled milk escaped. This was the case in two

children, two and four years of age, who remained free, although other children in the same household who drank raw milk contracted the disease.

The Medical Record, of March 28, 1896, contains Freeman's paper on the transmission of various diseases through infected milk. In twenty-six epidemics of scarlet fever in England traceable to milk, he showed that fifteen of these were found to be due to the disease in man.

In Plainfield, New Jersey, an epidemic was traced to a farm hand who had a mild attack of scarlet fever and who handled the milk while ill.

More recently, an outbreak of scarlet fever occurred among thirty-five students of Purdue University, Lafayette, Ind. The thirty-five students took their meals at eleven different boarding-houses, all of which were supplied with milk by the same dairyman. Also five private families supplied with the same milk had one or more cases of the fever in each of their households. The infection was attributed to winter clothing, which had just been put on and which had been laid away the previous winter, when the "dairyman's family ran through a course of scarlet fever."

From the now extensive literature on the subject, we may conclude that scarlet fever may be conveyed through a contaminated milk supply. The matter is not proven with scientific accuracy, or, one might say, beyond the peradventure of a doubt, but the chain of circumstantial evidence is so strong as to render this conclusion irresistible.

The view advanced by Dr. Klein, and some others, that the cows themselves sometimes suffer from scarlatina is not generally credited.

Hall, in his article in the *New York Medical Record*, Nov. 11th, 1899, in reviewing the subject of milk infection, makes the following interesting statement: "While scarlet fever occurs in epidemics in those countries where cows' milk forms a staple article of food, especially among children, it does not occur in countries where cows milk is not used as a food or where children are raised on mothers' milk only."

In Japan, cows' milk is not used and there scarlet fever is practically an unknown disease. In India, cows' milk is used, but children are kept at the maternal breast until they are three or four years of age. Scarlet fever is a rare disease in India and seldom occurs in epidemic form.

In January, 1907, an epidemic of scarlet fever and diphtheria swept over the city of Chicago. Altogether in one month more than 10,000 cases of infectious disease were reported, including 4,000 cases of scarlet fever and upwards of 1,000 of diphtheria.

There were over 300 deaths. It was proved that the outbreak was due to infected milk which came from two small places in Wisconsin, where there were cases of diphtheria and scarlet fever, namely, Basset Station and Genoa Junction. The former is a dairy-farming district where for months scarlet fever had been prevalent, yet milk was regularly shipped without warning of any kind to Evanston and Chicago.

In connection with this Chicago epidemic, it is worth noticing that in the bottling house of one of the largest dairy companies in the world, a man was found working visibly suffering from scarlet fever, the characteristic rash being present in the skin. Milk was also being received by the same company from two farms in which there were cases of scarlet fever.

Similar reported serious milk epidemics of scarlet fever occurred in Buffalo, 1899, London, Eng., 1901, and in Salem, Mass., in 1901.

As to diphtheria the medical literature of recent years contains many reports of milk-borne outbreaks. Mention of two or three of these will be sufficient for our present purpose.

In 1893, a small epidemic occurred in Lund, Sweden, when eight persons in different families became sick with diphtheria. These cases were traced to the use of milk from a farm near Lund; at this farmhouse two of the inmates were found to be infected with diphtheria.

Quite an extended epidemic occurred in 1886, in Frimly, England; in the course of a few days 70 cases of diphtheria occurred distributed in more than 30 families, 15 cases being fatal. All the sick had received milk from the same dairy. Not one case of diphtheria occurred during this time among consumers using milk from other dairies.

Another report is that from Ashtabula, Ohio, where 100 persons became affected with diphtheria in December, 1894. The houses in which the disease occurred were widely separated, but milk was taken at all of them from the same dairyman. On the farm of this dairyman a workman had a very sore throat, probably diphtheritic. This person had assisted in the work of the dairy while suffering acutely from sore throat. Of 44 households investigated, it was found that 32 had received milk directly from this sick person; the other 12 had received milk from the same dairy but it had been delivered by another man.

Dr. N. Flindt has given a detailed account of a diphtheria epidemic borne by milk from a co-operative dairy at Holbeak, in which 51 patients were infected in July, 16 cases the following month, and 6 more in September. This case is remarkable, in that the milk appears to have been contaminated for quite a long period.

It is certainly very difficult to prove the presence of diphtheria bacilli in market milk, because even if the milk has been the cause of the epidemic they are present in it only in very small quantity and usually but for a limited time. To the present time the diphtheria bacillus has only rarely been isolated from market milk samples.

In the case of typhoid fever, Dr. Caroe has reported 90 large and small typhoid epidemics which occurred immediately outside Copenhagen during the period 1878-96, and which were mostly due to infection by milk. In the city itself, in the year 1900, three definite typhoid milk epidemics occurred.

During the present year, early in the spring, an epidemic of typhoid took place in Paisley, Scotland, and it has been proven bacteriologically that upwards of 100 cases could be traced to infected milk. Many similar typhoid milk epidemics, both in Europe and America, are now on record.

Last year, at Oshawa, Ont., Dr. McCrea, health officer there, reported several cases of typhoid caused directly by milk contamination.

It is unnecessary to go farther in this discussion of typhoid milk epidemics, for it is a well-known fact that impure drinking water is probably the most common carrier of typhoid contagion to man, and it is self-evident that milk which is favorable to the growth of typhoid bacilli may be infected from the water. Typhoid bacilli may be blown about by the dust, carried on the boots of persons who walk over infected surfaces, and they may also be carried by flies, as was abundantly proven during the Spanish-American and the South African wars. By all of these means the milk may become infected with the typhoid bacilli.

In regard to tuberculosis, the bacilli may enter milk not only from tubercular cows and infected stables, but also without doubt from tuberculous people. The danger, however, is lessened in the case of the tubercular organism by the fact that these bacilli do not increase or multiply in milk. The latter peculiarity, as well as the fact that but few tubercular milk epidemics have been reported, puts tuberculosis rather out of the category of diseases that may be spread in epidemic form by means of the medium milk. But so prevalent is tubercular disease in man and animals, so generally diffused and numerous in the community are its sources, and so closely allied with these sources is the medium milk, which will preserve and convey its causal agent, that we can not advisedly dismiss from further discussion in this paper a disease which is so often milk-borne.

It has long been known that tuberculosis can be acquired by ingestion as well as by inhalation and inoculation, but the part

played by cows' milk in the spread of the disease has only recently begun to receive serious attention. That many persons, old and young, have been infected with tubercle bacilli through the milk of cows suffering from the disease, is one of the best attested facts in modern pathology, but the extent to which children are the victims of this infection is only now being recognized.

Prof. Von Behring says that milk fed to infants is the chief cause of tubercular infection. Though this teacher probably is in error in making such a statement, still we are safe in saying that most of the world's leading pathologists agree that it is one of the important sources of infection.

The British Royal Commission, appointed to inquire into "The effect of food derived from tuberculous animals upon human health," consisting of some of the most eminent physicians and physiologists in England, after careful examination of many experts and some very extensive and thorough experimenting, un-animously reported in 1895 that they believed that "an appreciable part of the tuberculosis that affects man is obtained through his food," and that "no doubt the largest part of the tuberculosis which man obtains through his food is by means of milk containing tuberculous matter."

Another British Royal Commission, appointed to inquire into the subject of "Controlling the danger to man through the use as food of the meat and milk of tuberculous animals," reported in 1898 its unanimous agreement with the findings of the former commission quoted above.

And the Royal Commission of 1901, appointed to enquire into the relation of human and animal tuberculosis, demonstrated conclusively that bovine tuberculosis can be transmitted to human beings, that there is no essential difference in the tuberculosis which affects human beings and that which affects bovine and other animals.

Dr. Oliver, of Paris, records an instance of 13 school girls belonging to a Paris boarding school becoming infected. Six of the girls died. It was found that in several cases the bowels were first attacked, and the outbreak was traced to the milk supply which came from a cow with a badly infected udder. Dr. Jacobi quotes a case recorded by Johnne, an eminent veterinary anatomist, of the death from tuberculosis of a little girl two and one-half years old. She had been fed upon the milk of a cow which her father, a farmer, had specially selected on account of the animal's splendid appearance. Later it was found that the cow was tubercular, but not until it was too late, the child having died.

We know positively that healthy cows fed upon food which contains tuberculous matter of human origin become infected with

the disease, and it is reasonable to suppose in the absence of conclusive proof to the contrary that human beings can be similarly infected by the ingestion of bovine tuberculous matter.

Of this we now have positive evidence. A little daughter of Gosse, a physician of Geneva, was infected by drinking the milk of a cow on the physician's own farm. The child died. Gosse conducted a post mortem and conclusively demonstrated that the cause of infection was the milk upon which the child had been fed and which proved to have come from a cow with tuberculosis of the udder.

Dr. George M. Kober tabulates 86 cases of tuberculosis, showing the transmission of bovine tuberculosis to human beings through milk. Added to these specific cases, it is now a well-known fact that the bovine tubercle bacillus has been found in an active state in the intestines of young infants, so that the chain of evidence is almost as near complete as anything in scientific medicine can be.

Even Koch now admits the presence of bovine tubercle bacilli affecting the mesenteric glands of children, and I believe the recent International Congress on Tuberculosis, at Washington, sustains a 95 per cent. testimony and belief that the bovine tubercle not only attacks intestinal glands, peritoneum, meninges and bone, but in addition this bovine bacillus finds its way to the lungs to produce phthisis pulmonalis, all of which infection may be definitely traced to the ingestion of milk bearing the germs of bovine tubercle.

Dr. John Ferguson, of Toronto, has recently quoted the report of Martin, of Copenhagen. Dr. Martin found some 123 cases of tubercular disease among 511 children of an institution which received its milk supply from a herd of tubercular cows.

To return from this digression, let me quote Power, of London, who sums up the points of note in milk epidemics and shows the outbreaks to have the following characteristics:

1. Outbreak sudden and cessation also abrupt, if allowance is made for the late cases, which have probably become infected from the earlier cases and not by the milk.

2. A large proportion of the attacks are simultaneous, the outbreak also reaches its maximum too rapidly to admit the possibility of infection from a first case.

3. Two or more persons in the same house are taken ill at the same time. This may occur apart from milk infection, but it is very exceptional as regards the first invasion of the household.

4. A very large proportion of the households attacked will be found to have a common milk supply, which, however, may not be distributed by the same retailer.

5. If the households are classified according to the amount of milk consumed daily, it will be found that the attacks are more numerous among those consuming a larger supply. The wealthier consumers generally suffer more than the poorer.

6. Attacks are rare among persons who drink little milk or only take it in tea or coffee or always have it boiled.

7. In scarlet fever milk epidemics the type of the disease is usually mild and attended with low mortality.

8. Infected cream or milk kept over night has been found to cause more virulent cases of the disease than milk consumed in the fresh state.

THE EVOLUTION OF SURGICAL TECHNIQUE DURING THE LAST HALF CENTURY

BY H. A. BOYCE,
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Mr. President, Members of the Canadian Hospital Association,
Ladies and Gentlemen—

THERE are three discoveries in the history of surgery which are of paramount importance. One was when Ambroise Paré substituted the ligature for the red hot knife and cautery; a second was when Morton demonstrated that human beings could be operated on painlessly under the influence of anesthetics, and the third and last, when Lister, founding upon the researches of Pasteur introduced the antiseptic principle in wound treatment.

The discovery of ether and chloroform brought with it great changes. Patients anxious for relief from pain submitted more readily to operation now than formerly. New operations were devised and carried into effect. As the field of surgery widened the disappointments to the surgeon increased. Nearly every wound became infected; as a result the patient either succumbed or after months of pain finally recovered. It is impossible to find words adequate to describe the condition of the patients in the surgical wards of hospitals prior to the days of antiseptis. In one corner of the ward there was a patient whose teeth were chattering from the chills of pyemia; near by was the bright red shining face of erysipelas; a little farther over was a patient in the death agony from tetanus; still farther down was a patient suffering from moist gangrene. Pus was streaming from every wound. The very air was alive with pathogenic germs. The stench of the wards was so bad that many a student fainted on entering them. Healing by first intention was so uncommon that, when it did occur, it was attributed to some freak of nature.

Many surgeons still clung to the idea that balsams, lotions, etc., were necessary for the proper healing of wounds. However, Syme of Edinburgh, recognized the fact that union of the tissues depended on some living power in them. This surgeon recommended the tying of large arteries with long, well waxed silk ligatures. The ends of the ligature were left long for the proper drainage of the wound. The skin was sutured with silver wire as recommended by Sims in 1857. As soon as suppuration began the lint which had been placed over the wound was soaked off. Condy's fluid was used to irrigate the wound. Union never occurred till the silk ligatures had sloughed off.

Sir James Y. Simpson, thinking these long silk ligatures were the cause of all the infections, recommended the compression of arteries by needles. By this method immediate union occasionally occurred.

This was the state of the Glasgow Infirmary when Lord Lister was appointed surgeon in 1860. Prior to his coming to Glasgow he had begun investigation into the nature and cause of suppuration of wounds. For some time he had taught that this condition was caused by decomposition of blood and serum brought about by the action of minute particles suspended in the air.

About this time the researches of Pasteur on fermentation and putrefaction were published. In these he demonstrated that this was not due to oxygen or gaseous constituent, but that air owed this property of producing putrefaction to minute particles suspended in it. Pasteur further stated that normal healthy tissues are devoid of bacteria. It is upon this postulate that the science of bacteriology is based. It is to this assertion we owe the greatest advance in surgical technique the world has ever known. It has led to the saving of multitudes of lives; upon it Lord Lister based his antiseptic treatment. From this has developed the antiseptic era. In fact the whole modern treatment of wounds has been determined and evolved from the assumption that normal tissues are free from germs, and hence, if germs from without are prevented from entering the wound it will heal by first intention.

For some time Lister had advocated the frequent washing of the hands of the surgeon and his assistants and also the frequent dressing of suppurating wounds. In the infirmary, he continued this work with greater zeal than ever. Stimulated by the facts gleaned from the lately published researches of Pasteur he continued his work on antiseptics. The results of his further investigations are best told in his own words: "In the course of an extended investigation into the nature of inflammation and the healthy and morbid conditions of the blood in relation to it, I arrived several years ago at the conclusion that the essential cause of suppuration in wounds is decomposition brought about by the atmosphere upon blood or serum retained within them; and in the case of contused wounds upon portions of tissue destroyed by the violence of injury. To prevent the occurrence of suppuration with all its attendant risks was an object manifestly desirable, but till lately apparently unattainable, since it seemed hopeless to exclude the oxygen of the air, which was universally regarded as the agent by which putrefaction was effected. But when it had been shown by the researches of Pasteur that the septic properties of the atmosphere depended not on oxygen or any gaseous constituent but on the minute organisms suspended

in it which owed their energy to their vitality, it occurred to me that decomposition in the injured part might be avoided without excluding the air, by applying as a dressing some material capable of destroying the life of the floating particles."

What was to be the material? How was it to be applied? The great master had heard that carbolic acid had been used to disinfect the sewage used on the lands at Carlisle. So successful was this substance in its work that it destroyed the odor and prevented the cattle from becoming infected by destroying the entozoa. At first this substance was supplied in a very crude form. This crude drug, as Lister taught, was insoluble in water.

His first practical attempt at antiseptis consisted in withdrawing a compound fracture from the action of these germs. He recognized that without cutting off the air supply he was able to transform the compound fracture into a centre similar to that of a simple fracture. To free the wound from microbes was sufficient. Lister removed those that collected in it and prevented others from entering the wound subsequently. Thus he was able to withdraw it from those infections of wounds which had led to such a large mortality. The use of antiseptic materials, that is those substances which destroy germs, became the foundation of his method. For this purpose he used carbolic acid.

In the case of the compound fracture spoken of above, Lister used a piece of calico soaked in carbolic acid to touch the wound and its interstices. Two layers of lint were laid over the wound. To keep the parts germ-free the lint was kept moist by occasionally painting it with carbolic acid.

He also observed at this time that the dead tissues and blood clots were replaced by healthy tissue. It was this fact that afterwards suggested the idea of the catgut ligatures.

The next step in the pathway of antiseptis was the use of carbolic oil in rendering aseptic the skin over a psoas abscess. A piece of lint saturated in carbolic oil was placed over the abscess. One edge was lifted up, the skin incised, and the pus evacuated. Then this mixture of pus and carbolic oil was used as a dressing over the abscess. In a short time only a few drops of serum exuded from the cavity. There was no more pus with which to mix the acid so Lister conceived the idea of making a putty. For this purpose he mixed carbolic oil and whiting in a mortar. This putty was spread on a piece of calico and applied over the wound. Over this was placed a piece of block tin held in position by adhesive straps.

The use of this putty was attended with so many practical inconveniences that Lister substituted a protective dressing, consisting of a mixture of one part carbolic acid in four of shellac,

spread on a piece of calico and painted over with a solution of India rubber in benzine.

Up to this time Lister had used lint to drain abscesses, etc. One day on removing a piece of this substance from an axillary abscess there was such a free discharge of pus that he thought the lint obstructed the drainage. A piece of rubber tubing was taken from a Richardson's spray producer; after cutting holes along the tube it was inserted into the wound. The next morning he found the cavity had drained so well that there were only a few drops of serum. Thus the drainage tube was introduced to surgery.

When carbolic acid in its purer form was supplied the great master found it was soluble in about twenty parts of water. Having applied this solution to a putrid sore next day he found that the odor was gone; and hence he decided to use this weaker solution to cleanse the hands, the skin around the wound, as well as for the disinfecting of instruments. He did this because he knew that antiseptics not only destroyed germs but also injured the cells of the tissues.

Prior to this time waxed silk ligatures had been used to ligate the larger arteries, while the smaller ones were twisted. Not one of the wounds in which these ligatures were used healed till they had sloughed away.

On December 12th, 1867, Lister ligated the carotid of a horse with a silk ligature which had been soaked for some time in carbolic solution. So successful was this operation that he felt justified when the opportunity presented itself, some six weeks later, to tie the external iliac artery of a woman for aneurism of the common femoral. So successful was this attempt that the patient left the hospital in six weeks. In about one year afterwards this patient died from rupture of an aortic aneurism. He found on examining his work that enclosed in a thin capsule of tissue there were a few drops of pus. Not considering this sufficiently satisfactory and safe to continue its use he set to work to find an absorbable ligature.

In 1868 he took a few strands of the peritoneum from the intestines of an ox, also some fine catgut, and ligated the carotid of a calf. One month subsequently he examined his work and found the catgut and other tissues had been absorbed, and in its place normal tissue had developed, thus strengthening the arteries. Thus absorbable ligatures came into use.

In some places instead of non-absorbent dressings they were using oakum, an absorbent dressing. It was the use of this dressing that suggested to the great teacher the employment of gauze in the practice of surgery.

The material selected by him, and still used all over the world, either impregnated with some antiseptic material or ster-

ilized by heat, was "book muslin." At first this was charged with resin, paraffin and carbolic acid.

In the early '80's Koch had drawn attention to the value of bichloride of mercury as a germicide.

After experimenting with bichloride, Lister found that gauze impregnated with this substance was better than carbolic gauze, since the latter soon lost its carbolic and thus was useless while the former retained its antiseptic properties because bichloride was not volatile. The great master next used sal alembroth gauze. But this proved too irritating to wounds, so he next used gauze impregnated with the double cyanide of mercury with zinc. This dressing proved so satisfactory that it has continued to be used up to the present time.

The results of Lister's work during this time are best described by Sir Hector Cameron in the following words: "Wounds were found to heal without suppuration or constitutional disturbances; compound fractures and dislocations were robbed of their former dangers which surrounded them; large chronic abscesses connected with bone diseases proved no longer to be incurable even when occurring in the adult; arterial trunks were ligatured in their continuity without fear of secondary hemorrhage or other mishap; joints opened whether by accident or the surgeon's knife healed without a disquieting symptom; ununited fractures were treated boldly by removing the ends of the fragments in open wounds; incursions were made with success into departments of practice which up to that date were looked upon as forbidden grounds."

Thus the technique of surgery was established on a sound scientific basis. It had evolved from a state of empiricism to that of well grounded truth. The uncertainty which enshrouded surgery prior to Lister's time is well expressed by Ambroise Paré's statement, "I dressed him, God healed him."

In the year 1888 Robert Koch announced and proved by indisputable evidence that the germs of the air were mainly innocuous. After thoroughly satisfying himself as to the correctness of this statement Lister abandoned the antiseptic spray.

For some years disciples of Lister had been using the antiseptic principles in the treatment of wounds. Many of these carried this treatment too far. Some poured whole kettles full of carbolic solution over wounds, thinking if a little killed some germs a quantity would kill more. The excessive use of antiseptics in many cases was followed by toxic effects. As a consequence they gradually grew in disfavor. As a substitute for them heat was used to sterilize instruments and dressings. Thus the antiseptic era was ushered in by Lister himself, for he was the first to use a dressing sterilized by heat.

Notwithstanding the mighty upheaval made in surgery by the

dawn of antiseptis it was not to rest on its achievements. Progress was its watchword.

By this method the field of operation, surgeons' hands, instruments, dressings, etc., are disinfected by mechanical washing, scrubbing and by antiseptic solutions and sterilization by heat. The methods of procedure are too well known to every one engaged in this work for me to occupy valuable time detailing them. Under the conscientious practice of the aseptic method the skull and abdomen are opened. Even that delicate structure, the heart, has been operated on with success, thus saving scores of lives from what would prove inevitable death. The success of these operations are all the result of a careful operative technique.

Thus surgery has passed from the night of infection and empiricism to the dawn of antiseptis and certainty, from antiseptis with its limited field of operation to the glorious noon-day of "asepsis" with its broad operative field.

SURGICAL TUBERCULOSIS*

BY E. M. VON EBERTS, M.D., M.R.C.S. (ENG.),

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I WOULD preface my remarks upon those clinical forms of tuberculosis which are included in the category of surgical affections by expressing my thanks to the Executive of the Canadian Hospital Association for their courtesies in extending to me an invitation to address this meeting.

During the past few years a vast amount of thought and energy has been expended by governments, federal, provincial and municipal; by charity organizations; by church societies and district visitors; by hospital authorities, both lay and professional, and by bacteriologists of note, in the perfection of methods for the detection and care of those suffering from pulmonary tuberculosis and for the protection of the community at large. As the impelling force in this vast movement had its origin in the recognition of the transmissibility of this disease, I have been impressed with the scant attention generally accorded tuberculous infections other than pulmonary, viewed in the light of their undoubtedly infectious nature.

The treatment of pulmonary disease depends for its success primarily upon the carrying out of certain hygienic and dietetic measures, and, owing to the vivid illumination of this phase of tuberculosis, the results achieved have probably been better on the whole than those obtained in the treatment of such surgical infections as have not been subjected to radical operative measures. I cannot help thinking that this lesser success is a direct result of the failure to apply to the treatment of surgical infections the regimen prescribed for pulmonary cases—rest, forced feeding and outside air.

As a starting-point let us review the ward history of the average case of tuberculous hip-joint disease complicated with sinus formation. As soon as possible after admission to the general surgical ward, that is, as soon as the routine connected with acute operative cases and the exactions of emergencies permit, the individual is skiagraphed, and the necessary fixation or extension apparatus ordered by the attending surgeon; dressing of the sinus is carried out, and the diet prescribed. Then follows an indefinite period of unavoidable delay while the apparatus is being selected or made, during which time the patient lies in the general ward and partakes with his fellows of the best air which

*An address given before a meeting of the Canadian Hospital Association in Toronto April 12, 1909.

the location and season or the ventilating equipment provides—air which is doubtless of a standard of purity sufficiently sustaining to the average individual not suffering from tuberculosis. If it be during the cold weather, the patient is allowed to remain night and day in the public ward. At other times orders are given for him to be placed on the verandah during the day. To what extent are these orders carried out? Daily dressings are necessary, but, as we all know, in large general wards there is no fixed period at which this function is carried out, especially the dressing of chronic cases. Frequently the residue of daylight is too small to warrant the patient's removal to the gallery that day. In short, instead of the patient being brought in for dressing he waits in for dressing. During the winter months, owing to the lack of proper protection he objects to remaining out all day—probably the solitary occupant of the verandah, and the fresh-air order of the chief or house-surgeon is not infrequently waived in the face of these remonstrances. On the other hand, if the order is enforced, the nurse finds the exposure a hardship, especially where a two-hour temperature has to be taken, and the practice is no doubt occasionally responsible for minor ailments among the nursing staff—an additional influence tending to keep the patient indoors.

Again, if the discharge from the sinus or sinuses is profuse and curetting is necessary, for which an anesthetic is administered, there is a temporary withdrawal of the normal food supply, and for some days, while in a lowered state of resistance, the patient is confined strictly to the ward.

The appetite gradually dwindles in spite of an extensive list of extras upon his diet card. Still later he becomes anemic and a chalybeate is prescribed. Interest in his own progress perceptibly wanes until the chief joy of this "chronic" is the advent of an "acute" and only an ambulance case can rouse him to an elbow posture—a state of mind which reflects very truly his depleted physical condition. In this way the winter months are dragged through—with improvement, it is true, but an improvement which does not balance with our actual knowledge of how such cases should be treated nor our skill in treating them.

The patient whose history we have reviewed is much in the position of one of the impounded herd of Tolstoi's parable, in which a multiplicity of ukases enjoining the sowing of grass seed, the building of protecting sheds, the washing of udders and, finally, daily grooming, proved ineffectual in staying the gradual decrease in the milk supply, as the cardinal essential—the leveling of the palings—was withheld. What these animals required was fresh browse; what our patients require is outside air.

This element, air, is concerned in all forms of ventilation; it is to be found of a standard of purity suitable for therapeutic

purposes, however, only on the outside of the four walls of the hospital ward. There it is "outside air," not to be enticed through the ventilators of double windows or forced through ventilating shafts. In other words "outside air" can not be imported.

How can we best eliminate in the conduct of cases of this kind the odd ends which tend to invite failure or at least a postponement of recovery? I am of the opinion that the first step in this direction must be the provision of special and separate accommodation—an open pavilion or verandah equipped with canvas shields for protection against unsuitable weather conditions, where patients will be constantly in the fresh air. During the colder months dressings should be carried out in a heated apartment adjoining. The nurses in charge of the ward should be suitably clad for the season. An orderly should be always promptly available for the shifting of beds.

At night the patients should be moved into a comfortably heated ward, as it is probably Utopian to hope that the average individual may be induced to spend a winter's night in the open air, although I am personally convinced that with a proper equipment only comfort and an exalted feeling of well-being result from this procedure. As a matter of fact, to carry out open air treatment during the day in cold weather requires such a special equipment—that is, an impervious mattress (preferably of felt), flannelette blankets instead of sheets, a Jaeger or four-point blanket, an eiderdown duvet and occasionally a hot-water bottle. The patient should wear flannelette pyjamas, warm socks, a warm bed-jacket and a light woollen tuque. It is very essential that the coverings should be light. A weight of bed-clothing is most irksome and detracts from the benefits of the treatment. If protection against wind is provided, the equipment described is ample for winter weather where the temperature is 10 deg. F. or higher. Too much stress cannot be laid upon the quality of the mattress. The patient can heat only one surface, and with most economy of heat energy that which lies beneath. Light coverings provide for proper body ventilation. The bed-clothing should be secured by means of blanket safety pins along one side and across the foot of the bed.

Under the plan proposed the serving of the mid-day meal during the colder months would be the chief obstacle. At this season breakfast and the evening meal could be served indoors, and with sufficient assistance I am satisfied that the serving of the mid-day meal would not present insuperable difficulties.

Every precaution should be taken in the disposal of infected material. How frequently one sees tuberculous material, such as caseating glands, joint curettings, or dressings from sinus cases, treated as ordinary infected material and disposed of in

the ordinary dressing tins, instead of being destroyed in the furnace. These casual methods show as little regard for the community, inside and outside, as the disposal of sputum by way of the sink.

In the regulation of the diet of this class of patient we are far in the wake of the physician. It is not enough to prescribe a liberal diet; it is necessary to see that the patient gets what is prescribed, that it is served in a palatable form, and finally that it is consumed. I am confident that a liberal Providence, through the medium of a generous public, leaves little to be desired in the quality of the raw foodstuffs supplied to our hospitals, but the source of cooks is a moot question, and I have often felt on inspecting the product of his or her art, as served in the hospital ward, that the patients partaking thereof were trusting largely to the uncovenanted mercies. There are undoubtedly good cooks abroad in the land, but unfortunately Hospital Boards of Management are apt to hold that a high-priced cook is out of place in a charitable institution. Tuberculous subjects, above all others, require not only food in abundance but food which is properly cooked and served in an attractive form. These patients, in addition to three full meals a day, should be given at least half a pint of milk between breakfast and the mid-day meal, at three o'clock in the afternoon, and before lights out. Raw eggs may be added. Such an extensive diet can be accepted only by those who are constantly in the outside air.

In order to appreciate the effect of fresh air and liberal feeding, the patients should be weighed once a week, and, as suggested by Doctor Joseph Pratt, of Boston, improvements in weight should be posted at regular intervals as an incentive to those who cavil at the forced feeding and outdoor regimen.

While apart from operative measures the essentials in the conduct of these cases are rest, liberal feeding and fresh air, we have in tuberculin a valuable adjuvant. My personal experience has been chiefly with the use of that form known as Tuberculin Rest, or the T. R. of commerce, administered in doses varying from 1-3000 to 1-800 of a milligramme, according to the body weight, at intervals of ten days to two weeks—the treatment extending over a period of six months to one year.

Where sinuses exist there is always a superadded pyogenic infection, which can best be combatted by the administration of an homologous bacterial vaccine.

With the expansion of a knowledge of the use of tuberculin there has been a marked diminution in the number of localized surgical infections subjected to operative interference. Until comparatively recently extensive resection of tuberculous glands was practised as a routine method. At the present time a large proportion of these cases are selected for treatment by more con-

servative methods and with decidedly better results. In the treatment of joint infections the resections of yore have been largely replaced by the employment of fixation apparatus, the use of Bier's bandage, puncture followed by the application of Klapp's suction cups, and the routine administration of tuberculin. Tuberculous peritonitis is now less frequently treated by incision and drainage; rest in the open air and a liberal diet offering in the majority of these cases a less unfavorable outlook.

In the treatment of surgical tuberculosis it is only a question of time when our hospitals will have to grapple with the family side of the problem. Bread-winners will not progress favorably if their minds are not relieved as to the maintenance of those dependent upon them. Mothers also must know that their children are not being neglected.

When discharged from the ward all patients, whether receiving tuberculin or not, should be instructed to report regularly at the out-patient department, and the names of those failing to do so should be referred to the district nurse for investigation. Cases of localized tuberculosis should not be allowed to return to the conditions under which the disease was contracted without an effort being made to discover and eliminate the source of infection or the predisposing factor, whether the latter be an undesirable occupation, insanitary housing, or a defective food supply. I would go a step further in expressing the opinion that all cases of localized tuberculosis should be reported. If such a process were legally enforced, these cases would be brought immediately under the eye of the civic authorities and the Tuberculosis League, and I am confident that in many instances evidence of infection in other members of the household would be detected. It is only by such careful supervision that relapses or metastases may be recognized early, that permanent cures may be effected, and that that millennium may be looked forward to when tuberculosis shall have become a comparatively rare affection.

There is nothing new in what I have put before you. The various ideas here assembled have all passed through the crucible of criticism and emerged as truths which may now be safely engrafted upon the Tree of the Art of Healing. The method of treatment outlined would, I believe, lead to a very material curtailment of the average time of retention of these patients—an achievement most urgently to be desired and yielding a three-fold blessing: a lessening of the tale of suffering; an earlier resumption of wage-earning, education or domestic duties; and a broadening of an institution's scope of usefulness.

TUBERCULOSIS OF THE HIP JOINT.*

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THE specimen which I am presenting is one of tuberculosis of the hip joint. It is of particular interest, because it is, I believe, the only fresh specimen (of its kind) in the Pathological Museum of the University of Toronto; and because it illustrates beautifully many of the phases of the destructive and defensive processes accompanying the disease.

The case was that of a boy of ten, who had been under treatment for hip disease for about six months. The patient's general health rapidly failed, the local symptoms increased in acuteness, abscess developed, and he died of tuberculous meningitis just one year after the appearance of the first symptoms.

In describing the pathology of a tuberculous joint, one must regulate his remarks according to the anatomy of the part. We have, therefore, to deal with the bones, the cartilages, the synovial membrane, the ligaments and the surrounding tissues.

When the disease commences in the bone, the region adjacent to an epiphyseal cartilage is the usual resting-place of the bacillus. This is explained by the theory that this particular region, being engaged in rapid proliferation, is comparatively low in resisting power to micro-organisms. Another suggestion is that, owing to the large blood supply to this locality and to the disposition of the blood in the sinuses instead of small tubules, the bacilli are more liable to be deposited here than elsewhere. At any rate, the organisms seem to have a strong preference for the cancellous bone tissue of the epiphyseal region between the ages of three and fourteen years.

The subsequent history you are familiar with, and it is very well illustrated in the gross in the specimen. The bacillus being deposited, immediately sets up an inflammatory reaction; epithelioid cells gather about; giant cells develop; leucocytes close in on the outside, and a tubercle is formed. The constant irritation of the bacilli results in the formation of granulation tissue; the osseous trabeculae at first atrophy, and later disappear, thus allowing neighboring foci to coalesce, and we have established what is commonly known as a "rarifying osteitis." When attacked with a curette, this tissue is much softer than normal, as is seen by reference to this specimen. You will notice that a probe can with ease be passed into the head of the femur, indicating a marked softening of the normal structure. The centres of the foci finally undergo

*Read before the Section in Pathology, Academy of Medicine, Toronto.

fatty degeneration and necrosis, and the whole area of cancellous bone is converted into a pulpy mass of granulation tissue and caseous debris.

The effect of all this inflammation in the region of the epiphyseal cartilage is very remarkable. At first, when the cartilage is simply the seat of a chronic inflammation, due to the proximity of the irritant, the result is an increased rapidity of growth; and it is an actual fact that, in knee joint disease in particular, the affected leg, after the first year, is from one-half to one inch longer than the other. Later on, the cartilage itself may be involved in



Photograph of os innominatum and upper extremity of femur, viewed from the front with joint cavity opened, exposing the acetabulum and head of the femur.

the destruction, and interference with growth and shortening from this cause result. It is not an unusual experience to find a case of knee joint disease at first show actual lengthening, and later on lose all this, and finally end up with the limbs of about equal length.

At any time during the progress of the disease as described, the surface of the bone may be invaded, and the articular cartilage lifted up or perforated. For a long time previous to this, changes have been noticeable in the cartilage. From a pale bluish tint, the color has become a decided pink, owing to the vascularization of the tissue from underneath. As in the case of the bone, the granulation tissue grows up and takes the place of the matrix, and, finally, perforations occur, allowing the infection to invade

the joint cavity. The cartilage being then attacked from below and from the sides by the vine-like ingrowing of the granulations, is rapidly destroyed, leaving the typical worm-eaten appearance shown by the specimen. You will notice areas of cartilage still hanging on here and there, and in the recent state these looked fairly normal on the surface, except for the pinkish color. Elsewhere the carious bone is exposed, except where it is overlaid by a soft fungous sort of granulation tissue.

Following the entrance of the bacillus into the joint cavity, the synovial membrane becomes infected. Indeed, in many cases it would appear that the synovial membrane is the primary focus of the disease, and, according to Koenig, this is the case in a majority of instances. American surgeons, however, do not credit this statement, believing that they have evidence enough from post-mortem and excision work, to show that, in the majority of cases, the epiphyseal cancellous tissue is the first to be affected. That destruction of cartilage and the underlying bone can result from a primary synovial infection is beyond dispute, however, as is seen in the specimen at hand. It is extremely unlikely that the disease could commence in the bone of both the femur and acetabulum at the same time, and yet the cartilage and bone in each case are practically equally affected. In the acetabulum you will notice the almost complete disappearance of cartilage, and also notice the abundance of dark granulations which have taken its place. When the joint was first opened, this had the typical appearance of unhealthy overgrown granulation tissue. The logical conclusion is, that the disease was either primarily synovial, or that it spread from the bone on one side through the cartilage to the synovial membrane and then attacked the cartilage and bone on the other side of the joint. The appearance of the synovial membrane in this case was quite typical. The whole surface was covered with a pulpy, jelly-like mass of granulations, with here and there a bunch hanging in from the capsule, where a synovial fringe originally existed. This latter sort of thing is better shown in a knee joint, where normally the fringes are long and hang loosely in the joint. The ligamentum teres, at the time of the post-mortem, was still unbroken, but it has since been severed in the handling of the specimen. However, it can readily be seen. Notice how it has been reduced to a mere thread. Usually it disappears very early in hip joint disease, and this fact is used to explain the extensive necrosis that so frequently takes place in the head of the femur in contradistinction to the effect of the disease in other bones.

Before leaving the cavity of the joint, just notice the irregularity of the acetabular cavity superiorly. It looks as if the acetabulum had been squeezed antero-posteriorly, and the cavity, instead of being round, as it is normally, is now quite elliptical,

with the long axis vertical. This is the commencement of the "wandering acetabulum," so typical in old hip joint disease. It is caused by the pressure of the head of the femur upward on the acetabulum surface, which has undergone a rarifying osteitis, and which, therefore, collapses, and allows the upward enlargement of the cavity. In old cases the acetabulum may in this way travel up on to the dorsum ilii for several inches.

Dislocation of the head of the femur is of frequent occurrence, but it practically never happens until sufficient destruction of the head has occurred to allow the remainder to slip past the acetabular rim.

The effect of the long-continued inflammation in the joint upon the capsule is remarkable. Although the ligaments have no histological tubercle present, they become, from prolonged irritation, the seat of a chronic inflammation, whose chief manifestation is a fibrosis, resulting in enormous thickening of the capsule. In the specimen, you will notice that the capsule, which is normally not more than one-eighth of an inch thick, presents in places nearly an inch of solid tissue. It is of importance for the surgeon to recognize that this thickening takes place in every case of synovial tuberculosis in order that he may put the limb in a correct attitude at as early a period in the disease as possible. If he neglects to do this, the correction of the deformity after fibrosis of the capsule has taken place is necessarily attended by severe trauma and is usually followed by acute exacerbation of the symptoms. In the specimen presented, for example, the thigh lay in extreme external rotation, which could not be corrected before or after the death of the patient. The tremendous thickening and shortening of the capsule posteriorly, which results from the patient constantly lying in that attitude, readily accounts for the difficulty of correction.

The subject of abscess formation has been so frequently discussed before this society that I shall only point out its relation to this specimen, and to the anatomy of the hip. As you know, the joint is surrounded by a capsule which is thickened at three places into special ligaments—the ilio-femoral, the ischio-capsular and the pubo-femoral, respectively. Between these thickened portions the capsule is much thinner, and it is through these spaces that abscesses usually burst. By far the commonest site of these three is the anterior one, between the ilio-femoral band and the pubo-femoral, underneath the ilio-psoas muscle. Here we have a bursa which lies directly on the capsule of the hip joint, and indeed, in one in every ten cases communicates with it. The specimen illustrates the course of such an abscess beautifully. You will notice on the front of the ilio-pectineal eminence the outline of a sinus, extending from the acetabulum upwards to the plane of the psoas

muscle. At the time of the operation, when this abscess was cleaned out, this sinus was discovered leading down into the joint, and in preparing the specimen I was careful to preserve the wall of the sinus to show the course of such an abscess.

The specimen is really an excellent one, and is a valuable addition to the museum, illustrating as it does so many of the features of acute tuberculosis of the hip joint.

169 College Street, Toronto.

ACADEMY OF MEDICINE

BY JOHN HUNTER, M.B., TORONTO.

For several years, Toronto medical men brooded over the problem of uniting the various medical societies into one large and strong organization. One barrier after another was removed, and difficulty after difficulty overcome, until, in 1907, a union was consummated, and the Academy of Medicine founded. A second annual meeting has been held, and so time enough has elapsed to enable the observer to form some idea—in nautical parlance—of the worthiness of the new craft launched on the sea of medical science, and of the haven toward which she is heading. Some optimistic spirits clamored for a more patriotic proposition, viz., a National Academy of Medicine, with fruitful daughter-branches in all our towns and cities throughout the Dominion. For the present, this scheme was looked upon as too visionary, and so it was left for the womb of the future to vitalize the idea of a great national institution that would give to Canadian medicine a distinctive status.

ITS FIRST PRESIDENT.

The Academy of Medicine, like all kindred institutions, is but the thoughts and purposes of men put into a concrete form. It has no vitality apart from its members, and even these could do no effective work without competent officers. However efficient the second President and his successors may prove to be, the record made by the first President—Dr. J. F. W. Ross—will always stand as a splendid tribute of his competency to fill the position. To an inspiring optimism, he added an unwearying industry, business alertness and good judgment. He met all manner of criticism with good-natured inflexibility. The subtle charm that enhanced all he did for the welfare of the Academy of Medicine was the spirit of unselfishness. With a foremost position in his profession, and wealth within the family circle sufficient to keep generations yet unborn in princely affluence, there was no other inducement but love for a noble profession to inspire him. The unanimous verdict of his confrères is, as doubtless that of the future will be, that he filled the position most acceptably and efficiently.

ITS FUTURE.

Emerson's counsel is worth repeating, "We cannot overstate our debt to the past, but the moment has the supreme claim; the sole terms on which the past can become ours are its subordination to the present." It is true the Academy of Medicine, *per se*, has

only a brief history; but as each of its members inherits the characteristics of a long line of ancestors, so it is the legitimate heir of the wisdom and experience of the societies whose incorporation into one body gave it birth. All experience of the past teaches that if the Academy of Medicine is to fulfil its mission in the future, it must rely upon the intelligence, industry and loyalty of all its members. These must strive to impress upon every graduate in medicine, the obligation that rests upon him or her to become a member, and to assure him or her of the great benefits to be derived from such membership. The Academy incorporates all the features of a post-graduate school, clinic, and social club. Highly and justly as we may appreciate the value of the reading, at home, of a good article or book, yet there is lacking the subtle charm of the living voice, and of the gestures and personality of the writer. No one is asked to believe all that is said, or acquiesce in all that is done; in fact, honest, intelligent criticism is always desirable, as is so tersely expressed by Osler: "During the next century, the new and the old will fight it out in these rooms in keen discussion, just as they have done since the days of Hippocrates. Time and again, it will happen that the new will not be true, and the true will not be new. The yesterday is forever being brought to trial at the bar of to-day, and the verdict is rarely unanimous; often it is wisely a case of judgment deferred. Look over the questions discussed twenty years ago; some are dead—judgment gone by default; some are still pending; a few are settled—or we think they are; many seem antiquated." The Academy makes no appeal to its members for uniformity of opinion, but it does claim uniformity of purpose, and unfaltering allegiance. No young physician should be beguiled by the apathy shown by a few older men. These may have succeeded fairly well because their confrères had not the advantages of medical societies or libraries, and so all had to compete on an equality. The ambitious graduate of to-day has no such handicap as his predecessors of a few past decades had. The Academy of Medicine, medical associations and societies, clinics, laboratories—all these are within his reach to aid him in scientific work. The young physician who, through apathy, ignorance or indolence, isolates himself from such potent aids, makes his life a hard, monotonous, non-progressive one. Listen to Osler's experience: "No one can have participated as I did in the work of this society, without feeling that it is one of the most potent factors for good in the city and the state. The annual and semi-annual meetings, benefiting alike hearts and heads, have brought us together in friendly rivalry, and have strengthened the bonds of good-fellowship. All crave companionship and encouragement, particularly when young, and these gatherings help to counteract the sterilizing influence of that isolation

in which so many men have to work. Look about and ask: Who are the happiest men in our ranks? Those who do not neglect the gathering of themselves together at our meetings. Who are the busiest? Those who are the most faithful in the discharge of their duties to the society. Who are most prosperous? Those who give to it much of their time and substance." Every reputable physician in Toronto and in adjacent vicinities should be a member of the Academy. But to no class should it make a more irresistible appeal than to the younger members of the profession, lest the years come when they will take no pleasure in attending its meetings.

THE VETERANS' SECTION.

The Academy has already a section, whose mission is to deal especially with the factors in life's first decade viz., Pediatrics. It has as yet no section devoted to the factors incident to the on-come of age. All history and experience teach us that the high mortality in infancy and early childhood is most discreditable to our stage of civilization, because it is largely preventable. The same can just as truly be said of the high mortality in life's later decades, because equally preventable. The vast host of people between fifty-five and seventy, whose mental and physical powers are far more impaired by disease than are those of many veterans between seventy and ninety, is as great a stigma on scientific medicine as it is on the character of our civilization. If the period of development requires such careful medical supervision, the period of devolution requires, in no less degree, the same oversight. This problem should make an irresistible appeal to the Academy of Medicine for the wisdom and experience of the aged members may be quite as valuable as the energy and enthusiasm of the younger ones. The sturdy old oaks in the forest protect the young saplings until their roots are securely embedded in the earth and their fibres have acquired the strength needed to withstand the wild fury of the storms. It is a wise provision in nature to have old and young commingle. The conservatism begotten of experience tempers the radicalism inspired by enthusiasm. The Academy would be greatly benefited by the enrollment in a section of those who have been in practice, say over twenty-five or thirty years, and whose special function it would be to deal with the problems incident to the on-come of age. These members would not be debarred from taking an active part in the other sections. Again, all who have been in practice for a quarter of a century or more owe it to themselves, not only to try and preserve their mental and physical stamina well on to the "three-score years and ten, or the four-score limit." but also to keep so fully abreast of the times as to help dispel the delusion haunting the minds of so many young and middle-aged physicians, viz., that when a man passes fifty, he must

become, almost automatically, a "back number." While mental and physical powers remain unimpaired, age should have practically nothing to do in making any man a "back number." If he has inherited, or acquired, the scientific spirit, and if he has made a wise use of his opportunities, instead of age being any handicap to the medical veteran, it should give him an immense advantage over his more youthful confrère. The stigmata that give rise to the rather opprobrious term, "back number," may be just as much in evidence any time between twenty-five and fifty as between the latter period and eighty. No man becomes a "back number" unless he is willing, through indolence or lack of the scientific spirit, to do so. The Academy will honor itself and confer a boon on its members by forming a section of those who have seen many years of service in the ranks of their profession. The on-come of age has its own problems, which would amply repay a most careful study of them.

MANAGEMENT OF INFECTIOUS DISEASES

BY MISS KATE MATHIESON, TORONTO.

IN every infectious disease, very much may be accomplished in the way of prevention. Unfortunately in the majority of such diseases there is no specific, prophylactic treatment such as we have in smallpox. If such were the case, it would only be a matter of time until all infectious diseases would be exterminated from the category of medicine.

However, we must not overlook the value of anti-diphtheritic serum and vaccine therapy, and while we have not derived from them all that our expectations may have desired, still, there is no doubt but that a great field of research has been opened up, and ere long much may be accomplished which shall be of value from a practical standpoint.

Since we are not yet able to produce immunity against all forms of infectious diseases, we must try and limit every focus of infection, and also try and prevent the germ-carrier from mingling with the public.

To limit every focus of infection is not always such an easy matter, because:

1. There is an absence of symptoms in a great many cases, and consequently the physician is not consulted.
2. The laity are often very ignorant of the importance of preventing contagion. If these difficulties could be overcome every infected case should be placed under rigid quarantine. Every case should be isolated, if not in an isolation hospital, in a suitable room in the private house, and neither the patients nor the attendants allowed to mingle with the public. Schools and churches should be closed where the disease is epidemic, public funerals should be prohibited, and children should not be allowed to play together on the street. Then the importance of the living germ-carrier in disseminating infection, although a comparatively recent discovery, is worthy of consideration.

There are at least four types of carriers:

1. Mild or unrecognized cases.
2. Convalescents released prematurely from quarantine.
3. Nurses, physicians, attendants, members of the family and articles which have been in contact with the patient.
4. Those persons who have never showed signs of illness, and who have not been in contact with a germ-carrier and who nevertheless harbor the specific germ.

Types I. and II. have been recognized for some time, and medical school inspection has taken into consideration the importance of control in such cases.

The danger from the other two types, although well-established,

lished, is not widely known. For example, when diphtheria breaks out in a home, those exposed are often given a prophylactic dose of antitoxin and because they do not develop an acute attack of diphtheria, they conclude that there is no infection present. This may not be the case, however, and in certain cases a sort of biological toleration seems to be established between the bacillus and the patient, so that the person will become a chronic diphtheria carrier, although remaining entirely well.

The fourth type of carrier, in whom no history of illness or contact can be secured, is more difficult to detect and control. In default of routine examination of all school children, the presence of germ-carriers of this class is only brought to light when cases of the disease due to their agency appear in a school or institution. The existence of such germ-carriers makes it imperative to trace to its source every case of an infectious nature breaking out in a school or institution.

The next important matter with regard to prevention is the thorough disinfection of the room, and everything that has been in contact with the patient.

Every city should have a steam disinfecting station where all articles, such as carpets and bedding, etc., can be thoroughly disinfected. Failing in this, they should be thoroughly disinfected by other means or burned.

The above precautions having been taken, we can still assist nature in strengthening our constitution, and in increasing our resistance, and, therefore, decrease the liability of being afflicted by any disease.

The consideration of the hospital management of cases of an infectious nature, I think it well to consider under two classes: 1st, the mild cases; 2nd, the severe cases.

Wherever a mild case enters an isolation hospital, we have to take into consideration, not only the patient, but also the friends and the public. The first and one of most importance is the patient. I might say here that I do not intend to go into a detailed account of the medical treatment, but merely the general management and difficulties with which we have to contend; and while the actual treatment of any mild case of diphtheria, for example, consists in leaving it to nature, or in giving a few thousand units of antitoxin, still we must not overlook the importance of the persistent vigilance necessary in the successful nurse in order that severe or fatal complications may not occur. For example, as a matter of routine, the temperature in mild or convalescent cases is often looked upon as being of no importance, and consequently its accuracy is sometimes questionable when taken by a disinterested nurse, but every nurse who has had a thorough training in infectious diseases, knows only too well that it may be an indication of some complication or associate condition which may mean nights of worry to the friends, and

days of persistent vigilance and constant attendance to herself. Therefore, the slightest elevation of temperature should be reported at once, and if thorough examination of the patient by the physician reveals no complication, the patient should be put in a single ward in case he may be developing something of an infectious nature, and the development watched closely until the physician is satisfied that his suspicions were unfounded. It is only in this way that you can minimize the ravages of a secondary infection in an institution dealing with contagious diseases, which are most prevalent among the young and immature.

The next difficulty with which we have to contend is the friends, and it seems to make but little difference whether they come from the domicile of the poor or the palace of the rich, a great many expect privileges which it would be dangerous to allow in an isolation hospital. Therefore, it is well to have certain fixed rules founded on the principles necessary for the prevention of contagion, and adhere to these rigidly, irrespective of the ill-will which you will undoubtedly obtain during the patient's stay in the hospital.

Now let us consider briefly the management of a severe case, and I think it well to confine our attention to a severe case of diphtheria, because, I think, there are few diseases that require the same amount of constant vigilance, shrewdness and good judgment on the part of the nurse as a severe case of diphtheria. Few diseases prove fatal in such a short time. Few diseases are so fatal without showing more physical signs, and I might also say that there are few diseases in which there can be more done if only we are able to interpret the danger signals in sufficient time. You might ask me what I would consider a severe case of diphtheria. The answer would be: All cases showing a pharyngeal exudate covering more than the tonsils, all cases of laryngeal invasion, all cases with pharyngeal exudate and profuse nasal discharge, and all cases with much enlargement of the cervical glands or evidence of toxemia should be considered seriously and watched closely.

The nurse in training, however, has no doubt divided these into two great classes, because to her they seemed the very opposite, and, therefore, the more striking from a comparative standpoint. On the one hand she notices the child with enlarged tonsils and marked peritonsillar swelling; she notices that not only the tonsils, but also the uvula, the soft palate and part of the hard palate are covered with membrane. From the nose there is a nasty, offensive, sanious discharge. The temperature is but slightly elevated, and the pulse somewhat accelerated. But more pronounced than all of these is the general appearance of the patient. The child seems very dull and listless, and his face bears that peculiar ashy and distressed appearance which, when once seen, can scarcely be forgotten; in it alone can the shrewd

and observant nurse read the prognosis almost as easily and accurately as the ordinary individual can read the barometer. These are the cases which, unfortunately, have been mistaken by the parents for mumps, croup, bronchitis, and endless other maladies, and consequently have received little or no treatment, and they are terribly surprised when the physician informs them that it is "too late." I mention this as an extreme case possibly, to show you how important it is for the nurse to keep up a constant scrutiny lest what at first appeared to her a mild case might pass into one of this calibre, and I might say that I have seen them do so in less than twenty-four hours, and you can imagine how humiliating it must be for a nurse to be told by the physician that he was not called in time. It is by recognizing these conditions as early as possible that the nurse can be of greatest service to the physician.

On the other hand, she has seen what appeared to be a very mild case, with apparently very little evidence of toxemia, do well for about two weeks. Then, without apparent cause, the child commenced to vomit, but she paid no attention to this, and allowed the patient to sit up and, to her surprise, the child suddenly became worse and died. Now the observant nurse would have noticed that previous to these symptoms there was a sudden drop in the pulse rate, and that it was also slightly irregular, and, no doubt, would have kept the child in a recumbent position and absolutely quiet and, with the assistance of the physician, whose attention she would have directed to this, she would undoubtedly have avoided this apparently sudden and fatal syncope. I take this as an instance of the care required with respect to complications involving the heart, and those of you who are familiar with diphtheria will no doubt agree with me that it is not exaggerated. True enough, many die from heart failure, the result of a thrombosis or change in the muscle wall itself, and the premonitory symptoms indicative of such changes are seldom so well marked that the nurse should always be expected to apprehend them, but in a case such as I have mentioned, where prodromal symptoms are invariably present, where we invariably find a sudden drop in the pulse rate, vomiting, abdominal pain, and disturbed respiration, there is no excuse for her if she does not recognize them and take the necessary precautions.

In conclusion, I have taken into consideration the fact that I am addressing an audience who are quite familiar with the management of any acute illness, and consequently to mention anything about hygienic, dietetic and medicinal measures would only be a repetition of well known facts. I hope that you will pardon me for undertaking the discussion of a subject which is undoubtedly worthy of the consideration of the physician rather than the nurse.

Selected Articles.

ADDRESS TO GRADUATING CLASS AT THE HOSPITAL FOR SICK CHILDREN

BY REV. BYRON H. STAUFFER, TORONTO.

MR. CHAIRMAN, Superintendent, Nurses, Ladies and Gentlemen,—I have taken a little interest—just a little—in the work of the Hospital for Sick Children, and I am sure I voice the sentiment of every friend on my right when I say it gives us all pleasure to be here to-night. I count it part of my Christian education to have known something of this hospital.

I have seen a good many parades, and I think the largest in point of number was the parade of the Grand Army Veterans some years ago, when their number was far larger than it is to-day, and in the short time I have been in Toronto I have seen some processions go down Yonge St., but I do not know that I have ever seen one as grand as the royal parade of carriages, with the nurses holding sick babies in their arms, which came up Yonge St. one day last autumn. And ever since then I have resolved to have perhaps a little more than a kindly word to say about this enterprise.

Now, I am commanded by the king on my left (Mr. Robertson) not to say a word about him to-night. Thus at the outset Mr. Robertson puts a very heavy handicap on me, but some time I hope to have the privilege, nurses, of saying to you behind his back what I dare not say about him before his face, and tell you what I think of him.

I must go this far to say that when I get my ideal ministry organized—and we all have an ideal church and an ideal ministry—when I get my ideal church and ideal ministry organized, I am going to nominate Mr. Robertson as the Bishop. (Applause).

There is no one better qualified to be a Christian minister and be the head of the whole institution than this same gentleman that plays Santa Claus once a year at the Hospital for Sick Children.

He was once present at the consecration and installation of a bishop. They prayed for him; they heard his credo and his vows; they placed the gospels on his back. His good old Irish mother's face was radiant with glory when she saw them place the mitre

on his head. They put the fisherman's ring on his hand, and led him to his throne. They handed him his crozier, and gave him their pledge of loyalty, and each priest of the diocese walked before him to kiss his ring. At last, when all this was over, he arose, walked down the aisle of the cathedral and up the side aisles, and with murmured words and extended hands, he blessed the people. He repaid their honor and their loyalty with his blessing.

To-day is our day to honor you, nurses. To-day we congratulate you; to-day we install you into your office. You have been crowned with the coronet of a nurse's cap. To-morrow we expect your blessing. You will walk down the aisles of bed-rooms and bless us with the blessings of trained and painstaking care. You will carry the treasures of our cradles in your arms, or perchance minister to ourselves. You will open a shutter, lower a window, administer medicine, soften our pillow, perchance hold our dying head. It will be your turn then. So it is perhaps with a bit of pardonable self-interest mingling with our motives, that we honor you this evening.

I think, Mr. Robertson, that all Toronto should be here to-night. The occasion is more important than the opening of a baseball season with a lieutenant-governor in the pitcher's box; more important than the launching of a Dreadnought, or the beginning of a Gipsy Smith mission. I was almost going to say it was more important than the graduation night of a university, for you, nurses, could not have a greater Alma Mater than this Hospital.

A hospital is a Christ House. I think it is about the first place Christ would visit were He to come to Toronto in the flesh. He does visit all hospitals, in spirit, every hour. My data for this is that He was ever found among the sick and the lame when He was on earth. The first hospital was a Christ House. This I say despite the fact that the earliest institution of this kind of which we know was formed by Buddhist priests, two hundred years before the birth of Christ. They foresaw the rising of the Sun of Righteousness in the early dawn of the day. They had the spirit of Christ. They got it in advance. Their deed makes the indifference of 20th century Christians towards such an institution as this the more inexcusable.

Yours is a great Alma Mater, nurses. I did not fully get the significance of it all until yesterday afternoon, when I spent an hour in the institution yonder, and in this adjunct of that institution. This is a model Nurses' Home. You can be as proud of it as the graduates are of Oxford or Harvard. It is of little wonder that graduates of Toronto Hospital for Sick Children are in demand the continent over. People will know you by your diploma.

The medical world, at least, knows that an institution that touches the lives and bodies of 1,300 children annually must naturally put a stamp of excellence upon its graduates. You have the right brand. You may boast that you spent three years in a Children's Hospital unequalled in America, and unsurpassed in the world.

You have a great profession. It is great because it alleviates distress and uplifts men, and that is the supreme test of all professions. The nurse is the handmaid of Christ. A German artist has painted a picture to suit the title, "Is it nothing to you, all ye that pass by?" He has painted the Lord Jesus upon a cross, with mankind filing past him from the back of the cross forwards. There is the newsboy, the giddy youth, the anxious-faced merchant, the proud prince, the lady of fashion, the mother with her babe in her arms, the working man, the robed ecclesiastic, the soldier, the statesman. The only face turned towards the suffering Christ, with a look of pity, is that of the nurse. She catches a glimpse of the office of the Christ. The patrons of your calling are Saint Florence Nightingale and Saint Clara Barton. We preachers are prone to speak of ours as the highest calling.

I once heard a clergyman lecturing at a lake resort upon the glorious sacrifices of the pulpit. The address was scarcely over when we all rushed out to the shore in answer to the alarm of a drowning accident. Three white-faced bodies lay on the sand; it was an awful sight. The lecturer said: "Come, let us away! This is too horrible!" Just then we witnessed a scene that held us spellbound. A nurse enjoying her vacation at the resort rushed out and superintended the work of resuscitation. She put her mouth to the mouth of one of the poor victims in a protracted effort to blow breath into the water-filled lungs. She humbled herself to do this work of the Christ.

You have a right to expect, nurses, that society will open its doors to you. You are not to be counted a menial. You stand on a pedestal of respect. The homes of the well-to-do will be open to you. The world will take off its hat to you.

You must have love, the unselfish love of Christ. The emphasis of the mission field is changing. Doctrine is no longer preached, but mercy is practised. Hence the nurse and the physician are beginning to be pre-eminent, perhaps elbowing out of the way the narrower work of the missionary of by-gone generations. That is a sign that Christ is here. Going through this hospital yesterday, following Mr. Robertson, and making a faster trip than I ever made on the Empire State Express, I saw signs that Christ is here.

I saw club-footed children being transformed by the blessed power of the knife of the surgeon. I saw the straightened limbs

of a girl who had hobbled into the hospital with legs bent like a pair of crossbows. I heard of a mother who did not know her four-month-old babe when it was given her a few weeks after it had been brought in with the most repulsive kind of a hare lip. "This is not my child," she cried, when the little one with its corrected mouth was brought to her, "You have exchanged my baby. Where is my child?" The picture of her deformed child had to be brought to her before she believed.

No wonder she broke into a flood of tears, tears of joy, as she carried the dear little thing to her home. Those are signs that Christ is here. John the Baptist once asked—"Art thou He that should come, or look we for another?" Do you remember Christ's answer? "Go and tell John that the blind receive their sight, the lame walk, the lepers are cleansed, the deaf hear, the dead are raised up, and the poor have the gospel preached unto them." Most of these signs follow the course of the modern hospital.

I need not tell you, nurses, that you need the patience, the self-sacrificing patience of Christ. You will be with people when they are the most petulant, the most whimsical, the most complaining. You will need to develop the art of gentleness. That art can be nurtured and developed by anyone who tries. You will need to smile away annoyances. You will need the saving grace of humor, to receive all kinds of complaints. The humorist is a benefactor of society.

Artemus Ward showed himself to be a real humorist, even when he was dying. The nurse lifted up his head to give him a potion that might relieve his cough. "Take it, take it," she coaxed, as she pressed it to the reluctant lips. "Do take it; take it for me; I'd do anything for you." "Would you?" murmured the dying man, who had made all London laugh, as his face lit up with the thought of his last joke—"Are you sure you would? Then take my medicine, will you?"

There is nothing like sunshine in the sick room. The sweet-voiced and sweet-hearted evangelist who is at Massey Hall, loves to shout, "Get the shine on your face." Too much sunshine is better than too little.

They tell of a certain army hospital during the Spanish-American War that had a corps of nurses of exceptional beauty, and if there weren't a few young men in the room, I would say just such a corps as those who are here before me to-night would have made. But it was whispered that these fair nurses were inclined to a little frivolity, inclined to flirt just a little, with the ailing young soldiers under their care. Now, when a soldier felt on the mend a conversation with a pretty nurse was delightful, but when

his wounds were troublesome, then gallantry was a thing he was hardly up to.

So one day a nurse came to the bed of a favorite soldier, and found him lying with closed eyes as if asleep, with this note pinned on his pillow, "Too sick to be nursed to-day—John Smith." And yet it was said that that particular hospital stood at the head of the list in the percentage of cures. The smiles of the nurses helped.

You will need all the tact of a bright intelligence. Our age is one of reason. In A.D. 1609, scolds were labeled and witches burned. But in 1909 we seek a reason even for scolds, in diagnosis and psychology. A little Brooklyn boy fell from a fence, landing on his head. He at once changed from the best to the worst of boys. In the olden days they would have said: "He has a devil." In the hospital the doctor lifted a little piece of his skull and he resumed his former good conduct. I know some children in Toronto who perhaps ought to have a little piece of their skull lifted likewise.

You dare make no mistakes in mixing the medicine. There will never be an apology made if you take the wrong bottle and give the wrong dose. We commit to you the treasures of our homes. I well remember five strategic weeks of my fatherhood when I made an every morning visit to a hospital, emerging from the street car to break into a rather undignified run of four blocks, dashing up the steps to the room where my little five-year-old girl was lying, with a nurse for her guardian angel. To the fidelity of that nurse, almost as much as to the skillful hands of the noble surgeon, I owe the fact that she is here, in this audience, this evening.

What tact the nurse can develop. Into this hospital I came one night to baptize a dying babe. I heard a child's voice in an occasional wail that told of physical torture. "That little five-year-old girl had her limb amputated at noon," explained the superintendent. Oh, poor little darling, you'll hobble through life's vestibule, but when you enter the real life through the gates of the City of Gold, you will walk straight along, without a limp. The nurse seemed to get right down under that child's cross and to bear it.

Hours had passed since she had first bent over that poor little girl crying for mamma and saying, "It surts, it surts," and still the young woman with the white headgear was humming away, with her cheek down close to the little sufferer's face, and her hand patting the curly head. Angels never saw a more glorious sight. But she couldn't get her patient to sleep. A series of sobs, punctuated by sighs and then a scream, "It surts, it surts."

Then a clever idea reinforced that nurse's resources. She got

a big dolly and held it towards the little girl, saying, "Dolly's hurt; put her to sleep. Dolly's foot hurts, too, put dolly to sleep." Nurse started a lullaby—"Go to sleep, my dolly dear." The child became interested in the effort, and joined in humming, "Go to sleep, my dolly dear." Then there were some broken-off sighs and some long, long breaths,—and nurse's voice, now singing a solo, became lower and lower as she came softly away, for dearie was asleep beside her dolly.

Oh that nurse was a brick. That nurse represented the most Christ-like spirit of this age. Her tact lay in the precious truth that concern for others makes us forget our own troubles.

You will need all the reverence of a saint, for you will often stand in the presence of death. The doctor rarely sees the sufferer die; the pastor rarely sees his parishioner die; but you must. That is your heaven-given ministry. When President McKinley died many pictures of the surgeons that operated upon him were published. But one magazine did honor to the nurses that attended him, and gave the public the pictures of the two women who ministered to the dying statesman when he needed his last cup of cold water. Have self-respect then, nurse, for you are a minister of Almighty God.

All this I have said as if you will always be a nurse. So you will. But your experience might be like that of a nurse whom I had as a respected member of my congregation in another city. She came to say good-bye one Sunday evening, and I asked her to write me a letter when she reached her destination. She did. The letter read: "Dear Mr. Stauffer,—I have taken a steady position to nurse—one man. He is not very sick. I send you his picture. He is my husband." I told of that incident to a circle of my friends. "Then, for goodness sake, why did she go through all the trouble of training for a nurse?" asked one helpless little woman.

I might have answered, "To avoid being like you." It would have been true. Now, no matter whether you do like my nurse did or not, you will have a personality in which you may always feel a pardonable pride. You will be strong. You will have had experience. You will know how to enter a room softly, and how to speak softly and tenderly. You will know how to be neat; how to be gentle; how to be brave; how to endure hardship; how to live in any condition; how to grace a cottage or adorn a palace. What you do and in what capacity, whether single or married, will not be nearly so important as what you are, as the result of having been a nurse. Qualities alone count. Even if you take off the nurse's cap, these years will be an asset, not a waste.

I remember the night when the lights of the Pan-American Exhibition in Buffalo were turned out forever. One moment we

still looked upon that dream of glory, the next moment all was black as a starless night. We went home with an indescribable sense of loss. Those light-crowned domes, those blazing arches, that great shaft of electric splendor had sunk into impenetrable darkness. We looked back as if rather expecting that our idol would absolutely refuse to be broken. But it was really gone. And yet, was it altogether obliterated?

Did not ten million pair of eyes look upon it? Were not a million souls stirred by its sublimity? Were not its qualities of grandeur carried away as so many relics, to be enshrined in countless homes and communities? Qualities are greater than material possessions. Nothing is lost. Nothing of experience is in vain. Glory then in the fact that the rich qualities of a nurse will abide with you forever. (Applause.)

THE INTESTINAL TRACT AS A BREEDER OF DISEASE

BY WILLIAM F. WAUGH, M.D., CHICAGO.

Our position upon this topic is so well understood by a large number of our readers that it would seem impossible to add another word to what we have said. However, our ranks are constantly gaining new recruits, and in such numbers, that it seems well worth while for us to speak these old truths again, and to define the exact conception we have formed of the matter.

Many patients suffer from constipation during the greater part of their lives. The tendency to this increases with age, especially as the habits become more sedentary. Fever, no matter what is its cause, invariably has the effect of checking the intestinal secretions, lessening the supply of these natural disinfectants of the alimentary canal, while the increased radiation of fluid tends to dry the blood and increase absorption from the alimentary canal into the circulation. Under the influence of the increased heat, bacterial action and the generation of toxins in the nitrogenous material in the bowel goes on with prodigious rapidity.

Thus we have increased toxin-formation and increased absorption. This is so uniform a condition that we firmly believe that every case of febrile disease is characterized by a certain degree of fecal auto-toxemia, and that to this cause is to be attributed a certain proportion of the symptoms shown by every febrile case, no matter whether the fever be of specific or nonspecific origin. Consequently we believe that by completely emptying the alimentary canal and disinfecting it, and subsequently keeping it

clear throughout the course of the febrile malady, we subtract from the symptomatology of that case whatever portion would otherwise have been caused by fecal toxemia.

Hence, we lay down as our first principle in the treatment of febrile maladies of every description the importance of keeping the alimentary canal clear and clean. The results of this treatment, not by ourselves alone but by thousands of our colleagues all over the country, amply justify this principle, and the maxim of "clean out, clean up and keep clean" is to-day a recognized foundation stone in clinical therapeutics.

The influence of this element in the causation of many maladies is just beginning to be understood. We have been urging it upon the doctor for a full quarter century, but only during the last few years has the profession taken it up in such a manner as to justify our views upon the generality of this condition. It is now fully established as a most important element in the causation even of certain maladies of the eye, and many an ophthalmologist has testified to the improved results which have followed in the local treatment of ocular maladies, when the bowels had been put in proper condition. The same is true as to maladies of the ear, nose and throat. Attention likewise has been called to the importance of this element in the causation of mental disease.

Many years ago Sir Lauder Brunton called attention to fecal toxemia as the principal etiologic element of locomotor ataxia and of other chronic affections of the spinal cord. It may readily be understood that, when these toxins are present in the circulating fluid, the delicate, highly specialized cells of the nervous system should be particularly sensitive to the malefic influence.

It is now dawning upon the minds of many that there was much truth in the belief of our grandfathers that disorder of the liver was responsible for many of the ailments for which the patients resorted to them. But we now know that the disorder of the liver is nearly always due to the reabsorption of fecal toxins, which the liver intercepts and throws out again and again into the bowel.

Much of this matter escapes the straining action of the liver, and some of it passes out through the kidneys in the form of indican. Some passes out of the body through the skin, inducing on its way pruritus, urticaria and many other dermic affections. In the meanwhile that portion which passes into the general circulation induces multitudes of disorders. *Where the point of lowest resistance is situated, there we find local disease as one evidence of this general impurity of the circulation.*

Most of the maladies attributed by Haig and others to uric acid may confidently be ascribed to fecal toxemia. Melancholia, depression of spirits, "the blues," sluggishness, indisposition to

apply oneself to the labors and duties of the hour, are so frequently due to fecal toxemia, that treatment of that malady is *a priori* indicated by the presence of this mental condition. Nearly if not all of those innumerable conditions which present themselves in sufficient force to make our patient uncomfortable, unfit him for the ordinary duties of life and deprive him of the pleasure of living, even though they may not send him directly to his physician for relief, may be ascribed to this cause.

The treatment, however, is by no means simple, as the above clear-cut description of the malady would lead one to suppose. When we say, "Clean out, clean up and keep clean," we have a readily comprehensible maxim on which to act. But to act effectively is another matter.

It is by no means all, to give a cathartic, or even to supplement it with intestinal antiseptics or a colonic flushing. I have applied this system for three weeks to an overloaded impacted bowel before fully accomplishing the object. Examine the abdomen carefully, note the symptoms of fecal toxemia, so carefully that you will be ready to recognize the malady when any of the symptoms present themselves, and confirm your diagnosis by repeated examinations of the urine for indican—not forgetting the significance of heightened acidity. Then apply your treatment and see how long it will take you so completely to relieve the conditions that the indican disappears and the reaction falls to normal.

An excellent routine measure is the administration of calomel, or of podophyllin, gr. 1-6 of the former or gr. 1-12 of the latter, repeated every hour for six doses, or the standard "Calomel, Podophyllin and Bilein" of the Abbott list, this to be followed by Saline Laxative or Salithia sufficient to produce watery stools. Supplement this by throwing into the bowel as much as it will hold of warm water containing in half a gallon one ounce of sodium bicarbonate. Let the patient lie on his back while taking the enema, or occupy the knee-chest position. Let the enema flow in slowly. The object is to distend the bowel, without however causing pain. After the bowel has been filled and emptied, the latter process being aided by gentle massage, it is well to throw in a pint or more of the alkaline solution and allow it to remain until evacuated naturally. Gentle massage may be employed during this period. When the bowel is apparently emptied, inject a pint of the same solution with 5 to 15 grains of zinc sulphocarbolate.

If indican still shows in the urine after the colon has been completely evacuated by four or five days' treatment of this kind, it is evident that there is some impaction in the small bowel also. For this condition, juglandin in small doses, gr. 1-6 every hour

through the day, often will prove sufficient in addition to the above-suggested treatment.

Meanwhile the alimentary canal should be rendered as nearly aseptie as possible by the use of the sulphocarbolates, preferably in the form of the W-A Intestinal Antiseptic. If acidity is present, sodium sulphocarbolate is useful. Of this 40 grains is the average adult daily dose. This should be continued until the stools have no longer any abnormally unpleasant odor. Then the sulphocarbolate may be reduced to a quantity just sufficient to maintain this effect.

If there is a hemorrhagic tendency, if the patient is disposed to tuberculosis calcium sulphocarbolate may be substituted for the sodium salt, in similar doses, given in the same manner.

If the fetor of the stools is unusual or there is any reason to apprehend the infection of the alimentary tract by pathogenic bacteria of any description, as in typhoid fever, dysentery or choleraic maladies, or if fermentation or gas formation is present, zinc sulphocarbolate is the best remedy. This may be administered in half the doses recommended for sodium sulphocarbolate.

There is no possible advantage in administering any intestinal antiseptic before the bowel has been emptied. No such agent can be expected to penetrate dry, solid fecal masses. But after the bowel has been evacuated the advantage of these remedies is so great that a single trial can scarcely fail to convince the physician of their efficacy.

Possibly there are other antiseptics that would answer as well. I do not believe it. I know of none which offers the advantages of the Abbott sulphocarbolates. They are presented in a high state of purity. They are not secret. They present no ulterior danger, such as hemoglobinuria, which is liable to result from salol or from any other preparation from which phenol may be freed in the intestines. In the high state of purity to which the Abbott laboratories have brought them they are easily given and non-irritating, and they are cheap.

The principle of "clean out, clean up and keep clean," of the correction of vaso-motor disequilibrium by the defervescent alkaloïds, the application of Calcidin to the forming stages of catarrhs and other maladies, the use of the H-M-C compound tablet as a desirable hypnotic, analgesic, antispasmodic and anesthetic, and the application of definite, unchangeable, therapeutic agents for the treatment of disorders of the physical functions, as presented in any malady, are right and will endure.—
Helpful Hints for the Busy Doctor.

THE TREATMENT OF INFANTILE DIARRHEA

In a paper on this subject by Dr. W. Lauzun-Brown, London, Eng., published March, 1907, in *The British Journal of Children's Diseases*, under, "After Treatment," Dr. Brown says:

Children stand starvation very badly. Feeding should be begun early. Milk sets up flatulence and distension, and encourages fermentation and the growth of bacteria in the alimentary canal. Sterilized olive oil, *per rectum*, or hypodermically, is very efficacious. Some form of sugar (one gramme equivalent to nine calories same as fat) may be injected subcutaneously, but it is important to use a weak solution to avoid abscess formation.

If the child lives through this stage it will thrive subsequently on what Trousseau calls the "raw meat" diet. When it is found that milk preparations continue to disagree with the child, it is suggested that it should abstain from them, and should live upon nothing but the old-fashioned barley-water for two or three days, and then return to a proteid diet of raw beef juice, clear chicken soup, or white of egg and water for a day or two more, and at the end of this time the child may be able to take milk again. A vegetable bouillon is recommended by French authors, made by adding to a quart of water, carrots 65 grms., potatoes 65 grms., turnips 25 grms., dry peas or beans 25 grms.; boil in a covered dish for four hours, and add 5 grms. of salt. Prepared daily, and used fresh every three hours just like milk, it has been found useful for babies from eighteen days to two and three months.

In this disease, where all milk disagrees, it is found that a pure cereal infant food can be used with great advantage. *I have always used Neave's food as an absolutely pure cereal preparation, free from any additional chemical matter, and free from the presence of peptonizing agents.* This food agrees with infants when they are recovering from infantile diarrhea. It is all very well to lay down hard and fast physiological lines in regard to starchy matters disagreeing with infants. It depends on the quality and quantity of the starchy matters, especially the quality. It is the paradoxes of life that beat physiologists and create new fields for investigation. It is known that in certain diseases of infancy where milk diet is entirely forbidden, and conspicuously so in infantile diarrhea, an infant's life may frequently be saved by the administration of a pure cereal food. I have used Neave's food in many cases of infantile diarrhea, and with striking success.

Trousseau's beef or fowl diet.—Trousseau's method of making his beef or fowl diet—beef and mutton are preferable—is as follows: Cut it up into very small morsels, then put it into a

mortar, and with the pestle work into a thick mass. The pulp so made is then passed through a cullender so fine as to permit nothing to be used except the juice of the meat and the fibrine of the blood, leaving behind blood-vessels and clear cellular tissue. By this means is produced a *purée de viande*, which is collected by scraping the external surface of the cullender. Convalescence is sometimes slow, and tonic treatment has to be administered, such as nux vomica and iron or perchlorides, or the hypophosphites.

Conclusion.—The modern methods include hypodermic injections of strychnine—a dangerous drug for infants—and transfusion of saline fluids into the subcutaneous cellular tissues, followed by the mustard-and-water bath, stomach lavage, rectal irrigation (4 ounces of $\frac{1}{2}$ per cent. solution of protargol, and other salts), feeding with a milk-free albuminous diet, with a little brandy as a stimulant, and the use of certain drugs. No principle unknown to the fathers of medicine nor any new method is here involved, if hypodermic injections of strychnine and the rectal injections of serum, which is as yet in the experimental stage, are omitted from the list as being of doubtful value.

School Hygiene.

SCHOOL HYGIENE IN TASMANIA

THERE was recently presented to both houses of parliament at the command of H. E. the Governor of Tasmania the first report on the work of the Medical Branch of the Education Department, by Dr. J. S. C. Elkington, D.P.H., Chief Health Officer.

The Medical Branch was established on March 1st, 1907, by the appointment of Dr. Gertrude Halley, Medical Inspector of State Schools (General); Dr. A. H. Clarke, Medical Inspector of State Schools (Actual); Dr. G. H. Hogg, Medical Inspector of State Schools, Launceston. These officers are paid by the Department of Education, and their work is directed by the Chief Health Officer, Dr. Elkington, in accordance with an arrangement sanctioned by the Honorable the Minister of Education. Dr. Elkington states that close co-operation with the Director of Education is maintained in all principal details, and especial care is taken to adapt the administration of the Branch to the methods and requirements of the Department of Education.

One thousand and twenty-two visits have been made by the Medical Inspectors, and 78 per cent. of the pupils in attendance have already been inspected, the number actually inspected being thus over 11,000. Medical treatment is not undertaken. Dr. Elkington has noticed an almost entire absence of parental objection, and a complete confidence and absence of fear or nervousness shown by the children towards the Medical Inspectors. One of the most important things in the report is the adoption of the letters I.E.P. (Interfering with Educational Progress) to mark a difference between a mere examination according to an ideal standard, and a useful, sensible application of the medical inspection to the educational and personal interests of the child. It is likely that we shall all borrow the I.E.P. from Tasmania. Nervous diseases are relatively unusual in Tasmanian school life. Chorea is comparatively rare. Seventy-one mentally defective children are recorded "not imbeciles or idiots, but incapable of benefiting by the ordinary methods of teaching." Dr. Elkington says special teachers must be provided for them.

We have seen no better report of medical inspection from anywhere than this. Few, indeed, can compare with it. We regret that we cannot quote *in extenso*, but one paragraph from Dr. Halley's report will command special interest.

"So many parents have visited me in the country towns, or have come to see me at the station, that I have arranged, whenever possible, to hold a mothers' meeting after school, an invitation being sent to the mothers of the children. In several cases where there was no mother, the fathers have come. These meetings have been most interesting. A short talk on general matters of health is given; for example, on infectious diseases, should there be any recent cases in the district, or some particular trouble, such as marked adenoids noticed in the school.

Each mother is then told privately, if there should be anything requiring attention in her child. Many mothers come long distances. At one school three walked over four miles; many came two or three miles, often carrying a baby that could not be left at home. Should a mother be unable to be present, a friend is often detailed to find out about the children. Thirty of these meetings have been held, with an average of over forty present, thus a large number of the women of the State have been reached and taught a few lessons on hygiene, as, for example, how to limit the spread of infectious diseases, and on the feeding and training of the children. These meetings are also of use to let the parents know that there is a genuine interest in and wish for the welfare of the children of the State among the officers of the Department.

The Canadian Journal of Medicine and Surgery

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Editorials.

THE SITE OF THE NEW TORONTO GENERAL HOSPITAL

ALREADY the work of tearing down the buildings on the site where the new Toronto General Hospital is to be erected is completed. The ground will be plowed and subsequently treated with disinfectants. Afterwards the site will be fenced in. In the spring of 1910, the work of preparing the foundations of the new buildings will proceed.

All arrangements between the University of Toronto and the Toronto General Hospital have been completed. The University adds \$400,000 to the \$300,000 given by it to the hospital three years ago, when an understanding was arrived at that the new hospital was to be erected on the present site. In all, the hospital gets from the University \$700,000, in consideration of part of the hospital site for the erection of pathological and other buildings, and certain rights regarding the appointments of professors of the University to the staff of the hospital.

It is provided, in the agreement between the Toronto General Hospital and the University of Toronto, that the chief professors, or heads of the departments of the Faculty of Medicine of the University, shall be, *ex-officio*, heads of the services in the new hospital. All other appointments on the hospital staff are to be made by the hospital trustees, on the recommendation only of a joint committee, consisting of eight members, four appointed by the University and four by the hospital.

This last provision will not really be a new feature, as the present heads of departments in the Toronto General Hospital are professors in the Faculty of Medicine of the University of Toronto.

It is understood, that the hospital's finances towards the new building stand, in rough figures, as follows: Subscriptions, \$1,300,000; University of Toronto, forty years debentures, \$300,000; value of the present old site, \$300,000; total, \$1,900,000. The cost is estimated at \$2,200,000. This leaves a balance of \$300,000, which the trustees of the hospital hope to raise by increased subscriptions and from other sources.

J. J. C.

DO WE EAT TOO MUCH ?

WERE one to answer the question at the head of this editorial, one would say that, judging from the display of knife and fork at medical banquets, doctors sometimes do exceed a safe gastronomic limit, though, ordinarily, they are more abstemious than gluttonous.

People of middle-age, and some of us have passed the fiftieth milestone—it would be unwise to acknowledge the sixtieth—must practise self-restraint at the table. When the molars drop out, or have been pulled out, why bother the stomach with much solid

food? Even if teeth, artificial or natural, enable one to masticate food properly, it is just as well to remember what *The Lancet* says: "As the fire of life burns less fiercely, and the output of energy is smaller, the fuel supplied should be so reduced that the system may not be clogged with ashes and half-burned cinders, whereby the activity of the whole machine is, from time to time, impaired, and may even be permanently arrested."

A healthy man of sixty should rise at 6 a.m., dress, and take some light exercise, or do some work in the open air—enough to moisten his brow and make him feel that he can breakfast on shredded wheat, with milk, toast and buttermilk, without asking for marmalade to stimulate his appetite. He should take exercise, walk, or do some work sufficient to entitle him to take soup, roast meat, vegetables, and seasonable fruit at noon. If his intellectual work is most satisfactorily done in the forenoon, let him take his walk, his golf, his drive, or what not, during the afternoon, keeping in the open air as much as possible.

At 6 p.m. a sexagenarian who follows such a regimen will easily relish two eggs, bread and butter, fresh fruit and buttermilk; a lettuce salad, with mayonnaise sauce, will help him to rest from 10 p.m. to 6 a.m., unless the prostate should be importunate.

Should a sexagenarian loaf in bed till 8 a.m., breakfast on meat and eggs which he has not earned; should he dine fully, dawdling about during the day, or reading or working at the desk, spending a long time at the supper table, he will suffer from a loaded colon and its attendant ills; will require a good many purgatives, or, if he has the cash and the leisure, may spend a season at Vichy or Carlsbad, in order to restore his shattered digestive organs.

J. J. C.

NOTIFICATION OF INSANITY, AND VOLUNTARY PATIENTS IN HOSPITALS FOR THE INSANE

OWING to the dominating influence of heredity in shaping the destiny of the insane, a lessened interest and ambition, a conviction of the uselessness of effort to control inevitable and hopeless conditions impresses even sanguine psychiatrists. Such a line of thought naturally inhibits therapeutic effort, and favors a let-alone policy in the treatment of the insane. But this would not accurately

indicate the course of action followed by the psychiatrist of to-day, who aims at ascertaining in what respects the insane patient is out of adjustment with his environment and his own hygiene; to learn what facts in the earlier history bear upon his actual mental status; from what early experiences erroneous deductions have been made, that initiated alarm, worry, despair or wrong habits of thought.

The chief cause of mental aberration is not necessarily in the brain tissue. Many insanities are due to disease of the arteries, including the arteries of the brain; to toxemia from defective elimination of waste products, and perhaps to lowering of the quality of the blood. Many other insanities are due to disordered function following stress or strain; and to improper and unhygienic use of the mind. Palliation or removal of these hurtful conditions has resulted in the emergence of some insane patients from their abnormal mental state, in spite of existing hereditary influence.

The increase of patients in Ontario hospitals for the insane is considerable. On December 1st, 1907, there were 5,315 insane persons and 775 idiots and feeble-minded persons. The net increase for the year was 118. On December 31st, 1908, there were 5,492 insane persons and 776 idiots and feeble-minded persons. The net increase for the year was 178.

Enlargements of the Provincial hospitals for the insane have been required, yet from all of them, more particularly, however, the central and western hospitals, the demands are for more rooms and more attendants. The present policy in regard to the insane is to build catch-basins, larger and larger in size, and to fill these basins full to overflowing. Some psychiatrists believe that a better policy would be to ascertain and remove the causes of insanity, before commitment is done in the usual way. Professor Adolf Meyer, Director of the Psychiatric Institute of the New York Hospitals for the Insane, suggests that a procedure, resembling the reporting of contagious diseases be adopted. For the safety of the individual and the community, isolated and special treatment should be secured. Dr. Meyer thinks, that insanity should be notifiable to a medical health officer, who should have power to act promptly, at an early stage of the disease, and to quarantine an insane patient under proper care. Such a disposal of cases would tend to lessen improper and insufficient treatment, which is some-

times accorded to insane patients prior to commitment. The incipient case would also be reached at an early stage, and perhaps prevented from gliding down the slope into a deeper gulf.

The State Commissioner in Lunacy, of New York State, at the 1908 session of the Legislature, introduced a bill, so amending the Insanity Law as to provide for admission into all the State Hospitals (except those for criminals) of voluntary patients, upon their written application, pursuant to the regulations of the Commission. The Commission has also ruled, that no alcoholic patient, without definite psychosis, and no cases of drug habit, without psychosis, shall be thus admitted. This bill amending the statute, so as to permit the reception of voluntary patients into New York State asylums has been signed by the Governor of that State. It is hoped that the results of the application of the new law in New York State will be as favorable as those recorded in other States of the American Republic. Thus, admission of voluntary patients into asylums for the insane has proved a success in Pennsylvania, Illinois, and especially in Massachusetts. In McLean Hospital, Waverly, Mass., about 35 per cent. of the patients were admitted as voluntary patients, and the percentage of recoveries averages nearly 29.

Would it not be a good thing to pass a similar law in Ontario? It is not a mere experiment; but a tried method of preventing continued insanity and finding an early relief for it.

Besides, it would give great opportunities to psychiatrists to ascertain the real causes of the noted increase of insanity; to teach the people what dangers to avoid; to ask for laws restricting demoralizing influences, and, while there is still easy access to the patient's confidence and to his real thoughts, to adjust him to his environment, explain and harmonize his troubles, and relieve his physical disorders.

J. J. C.

THE NEW WESTERN HOSPITAL

THROUGH information kindly given us by Dr. J. Price-Brown, Chairman of the Building Committee of the new Western Hospital, and from a report given *The Toronto World* by Dr. John Ferguson, we are enabled to place before our readers some data respect-

ing the past history of the old Western Hospital, and a brief description of the new one.

The Western Hospital has been in existence about twelve years. The site is an excellent one, situated on Bathurst Street, and covers about four and one-half acres of ground. For some years the main building upon it was the old MacDonald Homestead. But as this provided small accommodation for patients, tents were resorted to; and these have been used from then until now for this purpose—open on all sides during the summer season; closed and heated by steam heat in winter.

Several years after the inauguration of the Hospital the first new brick building was erected. It is termed the "Annex," the basement being devoted to laundry work; the first storey to semi-private male patients; the second to semi-private female patients.

Subsequently another brick building, for private patients, was erected, and since then two pairs of brick houses on Rosebery Avenue were purchased for direct use for maternity cases and to serve as Nurses' Home. These purchases, together with the buying of several adjoining lots, enabled the Board of Governors of the Hospital to complete the square facing Bathurst Street and extending from Nassau Street to Rosebery Avenue.

More recently still, the tents having done their full duty, in order to accommodate the steadily increasing number of patients, new and up-to-date buildings have become an imperative necessity.

Fortunately the justice of the city in granting \$50,000 each to four of the city hospitals came at the opportune moment. The share obtained by the Western Hospital, aided by the generous donation of \$25,000 by one of the members of the Board of Governors, will now enable them to put up the south wing of a large general hospital, the plan of which has been carefully and elaborately planned by the Building Committee, who have the matter in charge. While the Board of Governors expect to add the Administration Building and the north wing in the near future to the portion they have already undertaken to erect, the immediate plan will include corridors connecting all the present hospital buildings, together with the erection of a general furnace-house for the heating of the whole.

The plans, which were drawn by Mr. E. J. Lennox, architect, show an ideal building for its purpose.

It will be 333 feet 8 inches long, parallel with and facing Bathurst Street, and 90 feet from the road. The building now there will be left for the present and the addition will be in front of it. In width it will be 36 feet. The control or administrative portion will be a little wider, with an extra storey, which will be used as the caretaker's apartments and storerooms. In height it will be three storeys, counting the basement, which will be only two feet underground, not including the caretaker's addition.

The present building will be connected by a passage, which will be used as a "sun room" for convalescent patients. The north wing of the basement will be for out-patients and will be equipped with an emergency ward.

The north wing will be for male patients and the south for female ones. A dining room, recreation room, and lecture room for the nurses will also be in the basement. The heating apparatus will change the air throughout the whole structure every 15 minutes.

On the first floor will be the general offices, in the administrative section. The wings will be divided into 36 private wards. A patients' sitting-room will face Bathurst Street, with verandahs at each end for convalescents.

The second floor will have a library and accommodation for four house surgeons and the superintendents. The wings will have cots for 48 patients, and the wards will be public. Two rooms at either end will be sound-proof, and will be used for refractory or noisy patients. There will be a verandah at each end, and lounging rooms. Well-lighted operating rooms will also be on this floor, as well as an X-ray room and anesthetic rooms.

Solid brick, with stone trimmings, will be used, and the central part will be of stone to the height of one storey. The building will be absolutely fireproof, with terra cotta floors and steel framework. All the wards will be free from columns, giving more room and a clear view.

In the future the old building will probably be torn down and a replica of the new building put in its place, 80 feet to the east.

A permit has been issued for the building, which is to cost \$200,000.

It is expected that the south wing, which is being proceeded with, will be roofed by October and ready for occupation by February 1st next. Probably the whole structure will be completed by the latter part of 1910.

J. J. C.

EDITORIAL NOTES.

Speech or Stage Fright.—Speech or stage fright—a neurotic symptom founded on fear—a sudden irruption of a sense of incompetency—a manifestation of mental, nervous or physical incapacity is the bane of public speakers and performers. One cannot say that speech fright is frequently observable at medical meetings, the probable reasons being that the debaters have a good grip of the subject under discussion and do not, therefore, suffer from fright or lack of confidence. At medical dinners speechmaking is not in evidence, and whether it is that they lack confidence in their oratorical power, or have made no preparation, medicos do not care to put themselves in a position to be attacked by post-prandial speech fright. In fact, if the intellectual capacity of the doctor were to be gauged by his unreadiness to speak, even on a medical subject, at a medical dinner, he would be put down as an intellectual mediocrity. Writing on "Speech Fright" in *B. M. J.*, June 26, '09, J. Foster Palmer has the following: "There is no more certain sign of coming success in oratory than speech fright, which comes short of actual brain collapse. The state of nervous tension which precedes a vocal effort is a certain sign of a mental energy, that will appeal to others. The intensity of feeling which produces speech fright is identical with that, which impresses an audience. Probably no one, who has not suffered from speech fright, has ever made a speech really worth listening to. This fact is well known to teachers of singing and elocution. Nothing pleases them better than nervousness before a first performance."

Opium is a favorite drug for the relief of speech or stage fright, and the following draught: Spt. am. Co., 60 minims; tinct. opii., 10 minims; camphor water, 1 oz., taken a quarter of an hour before she went on to play the piano at a concert, is said to have steadied a frightened performer so thoroughly, that she was not in the least nervous throughout the evening.

A slower, but more scientific, and, certainly, a safer way of preventing speech fright, stage fright or piano fright, is that kind of training, which makes for a thorough grip of the subject to be dealt with before an audience. Many a good speaker or performer is intensely nervous just before a performance begins; but, if the

previous preparation has been adequate, any kind of diversion—even frivolous conversation—is worth a trial before resorting to an opiate.

The University of Toronto.—Some changes have been made in the staff of the medical department of the University of Toronto. As already noticed in this magazine, the chair of physiology has been divided, Professor A. B. Macallum having taken that of physiological chemistry, while Dr. Brodie, formerly Superintendent of the Brown Institution in the University of London, was appointed to the professorship of physiology, the duties of which he took up last winter.

Professor J. J. Mackenzie remains professor of pathology and bacteriology, and Dr. J. B. Leathes, who has been in charge of the laboratory of pathological chemistry at the Lister Institution, will take up the duties of the chair of pathological chemistry during the coming session.

The medical building of the University is to be enlarged to provide additional accommodation for the department of anatomy, over which Professor Playfair McMurrich presides.

The buildings of the University Library are also to be enlarged, and space will be provided for nearly double the number of books, and offering to each professor a private room, as well as seminary rooms for tutorial classes. It has also been resolved to build a large archaeological museum, which will be provincial in character, on a site within the grounds of the University, and under its control.

Commercial Cream of Tartar.—Bulletin No. 180 (Laboratory of the Inland Revenue Department, Ottawa) gives a report on 225 samples of commercial cream of tartar, collected in Canada, January, 1909. Genuine, 80 per cent; adulterated, 18.22 per cent.; doubtful, 1.78 per cent. In his report of September, 1905 (Bulletin No. 109), the chief analyst expresses himself as follows:

Ordinary commercial cream of tartar is ground argols, which have been more or less purified. Argols invariably contain both tartrate and sulphate of lime, and those lime salts appear in the commercial cream of tartar. They result in part from being natural to the wine, but chiefly from the so-called “plastering” of the wine. The manufacturer of cream of tartar is not respon-

sible for their presence; but, inasmuch as they reduce the value of the article for the purposes of breadmaking, their presence is a distinct disadvantage to the purchaser. It follows that genuine samples of cream of tartar may differ greatly in value. Samples containing 97 per cent. of bi-tartrate of potash are worth, pound for pound, 12 per cent. more than samples containing only 85 per cent. Purified cream of tartar is made from argols which have been subjected to processes of solution and recrystallization, by which most of the lime salts are got rid of."

So far the percentage of lime salts permissible in cream of tartar has not been established.

Cardiopaths and Extra Systoles.—G. W. Norris (*Am. Jour. Med. Sci.*, July, 1908). discussing the forms of cardiac arrhythmia, remarks that extra systoles are of frequent occurrence in cardiopaths. We cannot, however, draw any definite deductions by the mere fact of their presence, as to the stage, character or extent of the heart lesion. Productive factors are present in great numbers in such cases, that is, dilatation, inflammation, local cardiac anemia, over-exertion, etc. The worst cases of heart disease often terminate fatally without having at any time exhibited extra systoles. In reference to this subject, Wenkebach concludes that clinicians ought not to attach too much significance to extra systoles in themselves, and yet they ought to consider it worth while to examine every case and determine whether a cardiac lesion is present or not, whether there are any conditions (and they must be looked for outside of the heart) present, which could account, directly or indirectly, for the presence of the extra systoles. Among the extra-cardiac group, toxic and reflex cases are found. They occur as a result of the use of tobacco, alcohol, tea and coffee, as well as in cases of gastro-intestinal disturbances, intestinal parasites, etc. Extra systoles are also commonly seen during convalescence from typhoid fever, diphtheria, pneumonia, and other infectious fevers.

The Significance of the Red Ring in Hiller's Test.—R. H. M. Dawbarn, on "*Archives of Diagnoses*," Vol. 2, No. 2, calls attention to a sign sometimes found in the urine—the presence of a red line, of varying width, at the junction of the nitric acid and the urine. This line is not so sharply defined as the white line.

which indicates albumen, and if both lines are found, the red one is situated above the white one.

He thinks that the red line indicates that the patient is a "walking cesspool." The liver being unable to neutralize the toxins reaching it, most commonly from the feces in the intestines, poisoning of the body of the patient and lowered vitality result.

This sign has also been found in the urine of women suffering from subacute or chronic pelvic peritonitis, or pyo-sa epinx, with more or less of excrementitious material (mainly pus) steadily poisoning their blood.

Legal Regulation of Marriage.—In the August number of this magazine, we referred editorially to Prof. Ramsay Wright's lecture on the guarding of marriage, in order to prevent the evils of a bad heredity. We said that parents should look after the interests of their children, and be careful in advising them as to the selection of a suitable life partner.

It is quite true, that the most unselfish advice and the most scrupulous care are often expended in vain in trying to guard against a misalliance. This, however, is not a reason why parents should not persevere in endeavoring to secure the interests of their children, and in providing for a sound posterity.

Another feature of marriage calls for investigation by the State, e'er the nuptial knot be tied. The marriage of infected men to innocent women is an outrage, but is hard to prevent. No state, no board of health, no legislature, no body of physicians has taken steps to prevent it. Legal prevention will come in time, when education has so permeated the mass of mankind, that a physician's certificate shall be a prerequisite to the marriage license.

J. J. C.

PERSONALS.

Dr. Cassidy's office will be at suite 44, 2 Bloor Street East, over the Traders' Bank, corner of Bloor Street East and Yonge Street, during the remodelling of his residence. Office hours, 9.30 a.m., 11.30 a.m., 2 p.m., 4.30 p.m. Telephone, North 544.

News of the Month.

CANCER RESEARCH

THE second report of the Collis P. Huntington Fund for Cancer Research has been published. It contains seventeen papers, principally laboratory studies.

The workers have carried on their investigations with an open mind, no matter whether they lean to the intrinsic or extrinsic origin of cancer.

Drs. Beebe and Tracy, studying the effect of bacterial toxins on sarcoma in dogs, have shown that such tumors will entirely disappear, not only under the combined toxins, but under the injections of the B. prodigiosus alone.

Drs. Beebe and Crile have proven that the blood from a dog which has spontaneously recovered from sarcoma, when transfused into an animal with a rapidly growing sarcoma, has the power of producing immediate retrogression of the tumor, which, in nearly all cases, has gone on to entire disappearance.

The above is from a report of William B. Coley, in the twenty-fourth annual report of the General Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York.

American Hospital Association.—Eleventh Annual Conference of the American Hospital Association will be held at the New Willard Hotel, Washington, D.C., September, 21, 22, 23, 24, 1909.

Physicians' Notice.—The J. F. Hartz Co., Limited, Physicians' Supplies, are now located in their new and larger premises, 406-408 Yonge Street, three doors north of Hayter Street. Phones Main-3928, 7554, 7555.

Provincial Exhibits.—All the Provinces will be in line with exhibits in the Provinces Building at the Canadian National Exhibition this year. Each Provincial Government is at work on a display that will do justice to its territory, and the gold and fruit of British Columbia, the golden grain of the prairies from Alberta, Saskatchewan, and Manitoba, the various products and minerals of Ontario, right down to the best coal and farm products of Nova Scotia and New Brunswick, will form one of the many features that make the Fair truly National in character.

Bombay Medical Congress Exhibition, 1909.—It is officially notified that the exhibit of Messrs. Burroughs, Wellcome & Co., at the Bombay Medical Congress, held in February last, has received the highest award.

American Society of Obstetricians and Gynecologists.—The next meeting of the American Association of Obstetricians and Gynecologists will be held at Fort Wayne, Ind., September 21, 22, 23, under the Presidency of Wm. H. Humiston.

Regiment of Volunteers.—It is probable that an entire regiment of volunteers will be organized in the near future from the University of Toronto. It is expected that a \$100,000 addition will soon be made to the University gymnasium. The Governors of the University have also decided to proceed at once with the erection of the new Provincial Museum, which, it is said, will be without a peer on the continent. The building, which will cost \$300,000, will be erected on the southwest corner of Bloor and Avenue Road.

Proper Care of Milk to be Demonstrated at the Canadian National.—The educational features in connection with the Dairy department of the Canadian National Exhibition, Toronto, promises to be of unusual interest this year, not only to farmers, but to consumers of milk in cities and towns as well. The demonstration work and lectures in the dairy amphitheatre will be under the immediate charge of Mr. Geo. A. Putnam, director of dairy instructions for the Province, and the Dominion Department will also furnish a man to give some definite instruction along the cow-testing line. The proper care and handling of milk will be one of the subjects dealt with, and it will be accompanied by demonstrations of milk-testing as well as charts showing the value of cow-testing associations.

The Physician's Library.

BOOK REVIEWS

The Theory of Ions. A Consideration of Its Place in Biology and Therapeutics. By WILLIAM TIBBLES, M.D.; author of "Food and Hygiene," etc. New York: Rebman Company, 1123 Broadway. 1909. Price \$1.00.

This little book of 128 pages deals with many interesting theories relating to biology. Atoms are the smallest particles of matter which can take part in a chemical reaction. Under certain circumstances, the atoms of a molecule become dissociated; they are then charged with electricity and move about. Such dissociated atoms are called ions.

Theories are built up with the view of explaining the action and function of ions in biology, life, living matter, oxidation and immunity. These theories, while they may not be conclusive, or lead to a final solution of the mysteries that surround such subjects as matter, energy, force and so on; yet they tend to enlarge our ideas regarding such things and increase our interest in these important and intensely interesting subjects. No one will ever regret spending a few hours over this delightfully interesting book.

A. E.

Emergency Surgery. For the General Practitioner. By JOHN W. SLUSS, A.M., M.D., Professor of Anatomy, Indiana University School of Medicine; formerly Professor of Anatomy and Clinical Surgery, Medical College of Indiana; Surgeon to the Indianapolis City Hospital; Surgeon to the City Dispensary, member of the National Society of Military Surgeons. With 584 illustrations, some of which are printed in colors. Philadelphia: P. Blaikston's Son & Co., 1012 Walnut Street. 1908.

This surgery is not a text-book for students, although every student might well have it, and it would be of use to him, but it is an eminently practical surgery for the general practitioner, a surgery that will always be ready in the general practitioner's hand to bring to his mind at once and in the most definite form that which he requires. There is no space wasted on the opinions of a number of writers, although the best writers of the present day

have evidently been constantly before Dr. Sluss while writing this book.

It is very well illustrated, written in a clear style, easy to read, and carrying in every word of it the conviction to the reader's mind that the author is telling him exactly what he wants to know. No man who has the possibility of being asked to do average surgical work in his practice can very well afford to be without this in his library. The book is of a size and a shape that is easily carried in the pocket, and being bound in soft leather, is never awkward to handle.

A. J. J.

Writing the Short Story. By J. BERG. ESENWEIN. Publishers: Hinds, Noble & Eldredge, West Fiftieth St., New York.

This book embodies "the practical principles of short story structure as recognized by American and British magazine editors." Half the people nowadays read magazines half the time and crave for the short story, even newspaper accounts of occurrences must savor of a story, or the public vote them dreary reading. How necessary then that all who indulge in or work over any form of journalism, as we inclusively call it nowadays, should carefully study the construction and rules of story writing from the pen of the gifted editor of Lippincott's magazine.

W. A. Y.

A Synopsis of Surgery. By ERNEST W. HEY GROVES, M.S., M.D., B.Sc. (Lond.), F.R.C.S. (Eng.); Assistant Surgeon to the Bristol General Hospital; Surgeon to the Cossham Hospital; Senior Demonstrator of Anatomy at the University College, Bristol. Bristol: John Wright & Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd.

Nowadays students are almost staggered at the amount of reading they find necessary to get all the essential points on any surgical topic. The author of this small volume has attempted to make an epitome of the salient facts in surgical practice, and to place these facts in such a manner that they may most easily and rapidly be referred to or revised.

The matter has been compiled almost entirely from notes made by the author in preparing students for examinations.

The general practitioner will find the work of very great value, in that it permits him, in a short time, to get the pith, as it were, of the subject he is considering.

The student will find it practically a complete notebook on surgery, and one invaluable during not only his pre-examination stage, but throughout his entire practice.

P. P. G.

Practical Guide to the Diseases of the Throat, Nose, and Ear. For Senior Students and Junior Practitioners. By WM. LAMB, M.D., C.M., M.R.C.P.; Honorary Surgeon to the Birmingham Ear and Throat Hospital. Pp. xvi., 322. 55 illustrations and 2 plates. London: Bailliere, Tindall & Cox. 7s 6d.

This is the second edition of the author's little guide, published in 1904. The title has been somewhat modified, and additional notes have been added as to treatment.

This is one of the most valuable of the smaller books which have appeared in such numbers in recent years, in fact, one is surprised that so much information can be given in such small space.

P. P. G.

The Principles of Pharmacy. By HENRY V. ARNY, Ph.G., Ph.D.; Professor of Pharmacy at the Cleveland School of Pharmacy, Pharmacy Department of Western Reserve University. Octavo of 1,175 pages, with 246 illustrations, mostly original. Philadelphia and London: W. B. Saunders Company. 1909. Cloth, \$5.00 net; half-morocco, \$6.50 net. Canadian Agents: The J. F. Hartz Company, Ltd.

There are so many works on the subject at present that it is almost impossible to follow each of them. The author here has undoubtedly taken great pains to perfect a work that will be generally acceptable to physicians and likewise to practical pharmacists. The book consists of seven parts.

Part I. deals with pharmaceutical processes.

Part II. with galenical preparations.

Part III. with inorganic chemicals.

Part IV. with organic chemicals.

Part V. with chemical testing.

Part VI. with prescriptions.

Part VII. with laboratory work.

A. J. II.

On the Poison of Venomous Snakes, and the Methods of Preventing Death From Their Bite. Reprinted Papers by the late Sir Joseph Fayrer, Bt. K.C.S.I., M.D.; F.R.C.P., F.R.S.; Sir Lauder Brunton, Bt. LL.D., M.D., F.R.C.P., F.R.S.; and Major Leonard Rogers, I.M.S., M.S., F.R.C.P., F.R.C.S. London: MacMillan & Co., Limited, St. Martin's Street.

These papers are reprints covering the work done by the late Sir Joseph Fayrer, Sir Lauder Brunton and Major Rogers in India some years ago.

The experiments with the various snake poisons are described, and make very interesting reading. Permanganate of potassium

was found, when mixed with the poison, or injected beside it within a few minutes after the introduction of the venom, to either save the life of the animal; or if the dose of poison was too large for a small animal, like a rabbit or cat, to at least greatly prolong life.

Sir T. Auder Brunton invented a small instrument, with a lancet and cup, for permanganate crystals, to be carried by those in danger of snake bites. The lancet to lay open freely the infected area, and the crystals to be rubbed freely into the wounds.

While we in Canada have little or no danger from poisonous snakes, to intending residents where such danger exists, this work will prove of great interest.

W. J. W.

Treatment of Consumption. By W. CAMAC WILLIAMSON, B.A. Syd., M.D., Lond., F.R.C.P.; Lecturer in Medicine, University of Sydney. Pp. 266, viii. Toronto: The MacMillan Co. of Canada, Limited. Price, \$3.00 net.

In many ways we have found this a very interesting work, dealing principally with tuberculin in treatment of pulmonary tuberculosis. The author is enthusiastic in his use of tuberculin and gives condensed records of patients treated since 1902, records which speak volumes for the value of this method of treatment, and should increase the general interest in its use. We can recommend the chapter on tuberculin to those who are unconvinced as to its efficacy. The chapter on early diagnosis is not well arranged; there is no index to the work, and in looking for the index the reviewer must confess that his first impression of the author was not of the best when he found on the last pages of the work the stenographic report of an address by the author, the vote of thanks, with here and there (applause) interlarded. The book utterly fails as a guide to the use of tuberculin. The author glories in his own success in its use, but does not deign to reveal the dosage for others to follow.

J. H. E.

Immunity and Specific Therapy. By W. D'ESTE EMERY, M.D., B.Sc. (Lond.); Clinical Pathologist to King College Hospital and Pathologist to the Children's Hospital, Paddington Green; formerly Assistant Bacteriologist to the Royal College of Physicians and Surgeons, and Sometime Lecturer on Pathology and Bacteriology in the University of Birmingham. With illustrations. London: H. K. Lewis, 136 Gower Street, W.C. 1909.

This will undoubtedly prove an exceedingly useful book for the practitioner of studious habits, as it will serve to keep him refreshed and up-to-date in this most useful and necessary work. As the writer candidly says, "The factors in many of the problems of immunity are so complex that our knowledge of the subject grows

and alters so rapidly that it is quite impossible to be dogmatic at the present time." This work is deserving of careful study.

A. J. H.

Tuberculosis, a Preventable and Curable Disease. By S. A. KNOPF, M.D., Professor of Phthisic Therapy, Post-Graduate Medical School and Hospital; Associate Director of Clinic for Pulmonary Diseases, Health Department, New York, etc., etc. 8vo, pp. 394, xxxii., 115 illustrations. New York: Moffat, Yard & Co. \$2.00 net, by mail \$2.20.

Dr. Knopf, whose German prize essay on "Tuberculosis a Disease of the Masses" has gone through many editions in over twenty languages, has now issued a larger and more comprehensive work on the same subject, written for the public as well as the profession. It is a book to place in the hand of the patient, his household, the physician, "for the legislator, for educators, teachers, for rich and poor."

Medicinal treatment is omitted, but out-of-door living is dealt with at length, there being many splendid illustrations of porches, pavilions and other devices. Plans of special houses for tuberculous patients are given. It is a book which should be in the hands of every physician for the instruction of his tuberculous families.

There are a number of typographical errors, which can be remedied in another edition, which should soon be needed.

We must take strong exception to Knopf's statement that pasteurization deteriorates milk. He must rectify this statement to be in accord with modern science.

J. H. E.