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## *Original Contributions.*

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### MODERN PLAGUE, CLINICAL VARIETIES, PROPHYLAXIS

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

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THE revival of plague dates from the year 1894. Escaping from the western province of Yunnan it reached Canton, an important city and seaport of southern China. The first public knowledge of plague in Canton was in January, 1894, when Dr. Mary Niles was called to see General Wong's daughter-in-law, who was suffering from an inguinal bubo and grave constitutional symptoms. From this remote endemic focus the disease escaped and has spread in lines of advance to numerous countries in the four quarters of the globe. There are two distinct strains of plague, differing in the location of their permanent homes and in the facility for spreading outside the endemic foci. One of the endemic homes of plague is in Western Asia. The strain lodged there does not possess the same power of diffusion as does the Indo-Chinese strain. It was the Indo-Chinese variety which, escaping from its endemic centre in Yunnan, gave rise to the present pandemic. (From 1879 to 1894 not a single year passed without the appearance of plague in some locality distant enough from endemic plague centres; for example, India, Japan, Arabia, Persia, and Russia were thus invaded, but the disease did not develop pandemic proportions.) The startling fact about the excursion of plague in 1894 is that it did not limit itself to a locality primarily visited, but began a series of ramifications that have since become world-wide.

In 1894 plague was introduced from Canton into the neigh-

boring island of Hong Kong, a journey by water of about eight hours, and during this epidemic some 120,000 persons died in four months. In 1895 cases of plague were reported at Hong Kong, Amoy, Macao, and Foo Choo. In 1896 the disease entered Bombay, generally believed to have been imported from Southern China, although it again appeared in Hong Kong, where it has been epidemic ever since. In August, 1896, the disease spread throughout the whole vast territory of the Bombay presidency. In 1897 the disease was still limited principally to the Bombay presidency, with the exception that there appeared some 300 cases in the Punjab, with scattered cases in western and northern India. Also in this year there were epidemics in China, Amoy, Swatow, Hong Kong and Macao, and the island of Formosa suffered an epidemic that caused 500 deaths. In Japan there were a few cases in Nagasaki and Kanagawa prefectures, and in June and July pilgrims brought the disease to the Turkish seaport of Jiddah, with a sequel of 50 deaths.

In the year 1897 an international conference was held at Venice, and measures were devised to render effective and uniform the various procedures adopted by different countries against the threatening extension of plague. During the year 1898 plague extended far from its endemic home and reached the African islands of Madagascar and Mauritius. In 1899 plague was still increasing in India, there being 135,000 deaths from it in all India. China was still suffering seriously. There were epidemics at Kobe and in the neighboring city of Osaka, Japan, and the epidemic was still ravaging the island of Formosa. The Straits Settlements were now invaded, the infection being imported from Hong Kong into the cities of Penang and Singapore, where it became epidemic, and 40 persons died of plague in the seaport of Bashi, in Persia. In Egypt also there were 100 cases, the disease being confined to Alexandria; also 100 cases occurred at Bassan on the French ivory coast. There were cases also at Honolulu, marking the invasion of the Hawaiian Islands. In this year, too, Europe was invaded, the disease having visited Portugal, Russia, and Austria. The same year the disease reached the continent of South America, for at Assumption, Paraguay, there were over 100 cases. In Brazil, at Santos, 40 cases, sporadic cases at Sao Paulo, and the disease was present at Corrientes, Formosa, and in Argentina.

In 1900 plague was present in the four quarters of the globe: Europe, Asia, Africa, North and South America, and Australia. Australia became a plague centre in that year, and has lodged the disease ever since. At Sydney, New South Wales, there were three hundred cases in that year, and the disease has spread to Victoria and Melbourne, and in South Australia to Adelaide, and in Western Australia to Fremantle, and in Queensland to Brisbane; also

at Auckland, New Zealand, plague was reported present. In this year Glasgow, Scotland, developed 32 cases, with 8 deaths within two months. Four cases and two deaths were reported at London, England, and a single case at Cardiff, Wales. A case also occurred in Germany. The Government of Astrakhan, Russia, afflicted the previous year, was again the seat of an epidemic. There was an epidemic in the Government of Samare, and the most notable fact in the history of plague in the western world was the appearance of 22 fatal cases in San Francisco, Cal. In South America there occurred in Brazil about 600 cases at Rio de Janeiro, and the disease was present at Sao Paulo, Santos, Nictheroy, and Petropolis. In Argentina epidemics prevailed at Buenos Ayres and Rosario, and there were cases at Paraguay, at Assumption and Concepcion.

Plague having established an abode in every continent, the future history of the pandemic is largely a chronicle of intra-continental expansion. We will, therefore, not follow the lines of advance further, but merely pass over the next six years and state something of the more recent prevalence of the disease.

Last year 1,400,000 cases, with 1,200,000 deaths, are reported for India, and plague has been present in a more or less epidemic form in China; is scattered widely in Japan; present also in Persia, Arabia, Siam, and Straits Settlements; in Egypt, at Alexandria, Ismailia, Port Said, Suez, and nine provinces. African territory is invaded, Tunis, Algeria, British East Africa, and the epidemic in Mauritius has completed its tenth year and an epidemic is prevailing in Zanzibar. Plague is still present in Australia, with epidemics in Sydney, Brisbane, Cairns, and Port Douglas. New Zealand still lodges the disease at Auckland, and an epidemic of small proportions has occurred at Honolulu. Plague is still present in the Astrakhan Government, Russia. Two more cases in 1907 appeared in Glasgow and many epidemics in different parts of South America. Two deaths from plague in Trinidad. In May, 1907, a case from a tug-boat died at the Marine Hospital at San Francisco, Cal., and during the calendar year of 1907, 156 cases with 76 deaths occurred at San Francisco. There were also a few cases at Oakland, Point Richmond, Berkeley, and at Seattle, Washington, three fatal cases occurred in October. During the present year, 1908, Ecuador and Venezuela, in South America, and now the disease has extended to Peru, and in Africa to the British Gold Coast, and in the Azores to the island of Terceira. These four countries, added to our list, make a total of fifty-three countries infected since the primary outbreak in China in 1894. Such is a brief outline of the present pandemic of plague.

In the long history of plague pestilences we find that plague

as often as it has made its appearance in Europe has been imported. A study of this history teaches us that it was repeatedly a single plague-stricken person who infected a country previously spared, and that without exception every plague epidemic, even when the manner of its importation was unknown, rose slowly and gradually from single isolated cases of illness. The recognition of first cases is, therefore, of incalculable importance, and can even be the preliminary condition of an early and effectual prevention of further spread of the pestilence. Plague occurs in most cases suddenly, and takes its course, as a rule, in from three to five days, in the form of a general indisposition. There are either inflamed swellings of the outer lymphatic glands or the formation of a pustule, or a carbuncle on the skin, or inflammation of the lungs, that is, at the commencement of the illness, during the course of the same, or these are only observed on the corpse. The above is a general description in the roughest outline. The sickness attacks persons of both sexes, of every age and all classes. It generally first appears in the houses of the poor and indigent, and develops itself worse there. The pronounced illness is often preceded for hours or days by preliminary symptoms, such as fainting, depression, increase of thirst, headache, backache, and loss of appetite (ordinary symptoms of fever). The commencement is frequently quite sudden. There is stinging, burning or dull pains at the spots where carbuncles or gland inflammation will shortly develop, or tightness and pain in the chest, and later there are symptoms of shivering, chills, and fever. The commencement of the illness is almost invariably accompanied by a giddy feeling in the head, which develops into a severe state of helplessness. This feeling then creeps over the whole body and shows itself in a numbness of the limbs, which are little under control; nausea or vomiting often accompanied by giddiness and weakness of the heart with collapse is very common. When the patient comes under the treatment of the physician a serious case of illness has, as a rule, developed, and the patient is found staring into vacancy with a swollen, flabby and expressionless face, the conjunctivae being quite red, the speech slow and hesitating, the gait unsteady and swaying, and the sick person gives a general impression of being intoxicated. This impression is heightened sometimes by scratches and bruises covered with blood found on the skin of the patient's face and limbs. These are caused by the sick person tumbling about. The tongue is white and dry, as if coated with chalk, though sometimes raspberry red, with enlarged papillae, the skin is dry over the whole body, and very hot, with the exception that the limbs are usually cold and covered with clammy sweat. Respiration varies, often it is not very rapid, pulse as a rule is rapid, the radial pulse often dicrotic and thready. The patient when put to bed soon

falls into a slumbering weakness. He mutters or talks wildly, rolls about from side to side, or tries to rise and wander about again, or he may rave furiously. He makes attempts to escape, acting under the idea that he must go home, go to business or quench his thirst. He is more or less delirious. In most cases on careful examination the local seat of illness can be found during the first hour of attack, and thereby an accurate diagnosis can be made. A freshly developed swelling of the glands, a skin pustule, or the preliminary symptoms of pulmonary inflammation, belong to the completed description of plague, which therefore appears in three main forms, glandular, skin and pulmonary, with, of course, the septicemic form, which is but an exceedingly virulent type of the glandular form. In this septicemic form, the lymphatic glands show no special enlargement during life, and consequently the bubo is absent, but after death the lymphatic glands are found to be generally affected, being somewhat enlarged and much congested. In this form of plague, bacilli early invade the blood in large numbers, and are easily detected in it. The chief characteristic of this type is its rapidity, the patient being profoundly affected by the amount and strength of the poison received. This form is usually ushered in with high fever, but at times there is no power in the patient for reaction and the temperature does not reach 100 deg. F. The countenance is pale and expressionless, it is apathetic. There is extreme nervous prostration, muscular weakness, delirium, picking of the bed clothes, stupor and coma following quickly in the course of the disease and the patient dies on the first, second or third day. In those cases there may be bleeding from the nose, kidneys, and bowels. Plague in the intestines or the stomach has, so far as I know, only been found in animals up to the present. In glandular plague or bubonic plague (by far the most prevalent form of the illness) the formation of the bubo is pathognomonic. This takes the shape of a small or large, rapid or slowly developing inflamed swelling of one or more lymphatic glands and surrounding tissue. Any exterior lymphatic gland can form the seat of the disease. In the great proportion of cases the bubo arises in the abdominal bend or in the upper femoral triangle. It also occurs frequently in the arm-pits, or, in the case of children, on the neck. In isolated cases the glands at the back of the head, in the elbow bend (supratrochlear), in the hollow of the knee (popliteal), and, in a few incidents, the parotid glands are the seat of the inflammation. Sensitiveness to pressure of the bubo is generally much greater than spontaneous pain. The patient does not undergo much suffering if the portion of the body over which the bubo is developing is kept at rest and tension relieved by relaxation of the muscles putting the limbs in an easy fixed position. The buboes are extremely

sensitive to the touch and to pressure, and though easily missed by the patient when small, a careful examination by the physician will reveal the presence of swollen, infected superficial glands, however small in size they may be. The most common site is the groin, the next is the arm-pit. Oftener groups of neighboring lymphatics become infected. If the patient lives for seven or eight days the bubo either begins to resolve or shows signs of softening, or goes on to suppuration and sloughing. Examination of the lymph and blood of the glands and buboes will show large numbers of plague bacilli. A gland or bubo may be punctured and a small quantity of contents drawn off in a sterilized pipette for bacterial examination.

Pulmonary plague, which is very prevalent in some pestilences, but which generally yields the first place to the glandular form, takes its course almost exactly like ordinary violent catarrhal and sometimes lobar pneumonia. In some cases it cannot be distinguished from these pulmonary inflammations without a bacteriological investigation of the expectoration, even in spite of the serious general symptoms, for beyond cough and fever and a prostration, which is exceptionally severe and exceeding that which ought to be expected from the small amount of lung mischief discernible, there are few signs to raise suspicion that the disease is plague. The sputum has not the glairy, viscid, rusty character of acute pneumonia, though on the clothes it may readily be mistaken for this. Moist sounds are heard at the base of the lungs and over the pneumonic patches, but, however hurried the breathing and quick the rate of pulse, there is not that disproportion between the pulse and respiration ratio which obtains in acute pneumonia. The symptoms become rapidly worse, the patient becomes delirious, there is gradual failure of the heart's action with or without coma, and death occurs on the fourth or fifth day or earlier. This form of plague, besides being the most infectious, is also the most fatal. This form owes its infectivity to the fact that the sputum frequently contains almost a pure culture of bacilli, which get on the handkerchief, clothing, bedding, articles of furniture, as well as on the floor of the patient's room, and it is interesting to note that pain, tenderness, and enlargement of the lymphatic glands in the inguinal, femoral, axillary and cervical regions are absent.

The cutaneous type is rather rare. In this form the spots on the skin commence by appearing somewhat as a flea bite, with symptoms of violent pain at a point which becomes brown to about the size of a split pea, and little pustules form on these areas. These generally leave a scar. This little spot either forms into a pustule or the tissue underneath becomes solid and hard, changing later on into a deep-seated carbuncle, and ultimately into a gangrenous abscess, and one can often see inflamed lymphatic vessels leading from this point to the neighboring lymphatic glands.

I have tried to briefly describe the three main clinical varieties; a more extended classification is that of Dr. Cantlie, who has grouped the several varieties as follows: (1) Bubonic, (2) pneumonic, (3) intestinal where a flux occurs consisting of diarrhoea at the onset, to be followed later by the appearance of blood, mucus, and epithelium in the stools (4) the cerebral, in which the mucous symptoms are very pronounced, and the delirium is apparently suicidal in type and sets in early. In this type there is much muscular twitching, tonic and clonic spasms, especially in children, and there is early loss of consciousness and deafness; (5) puerperal, where there is hemorrhage from the uterus and miscarriage as prominent symptoms; (6) toxic, rapidly fatal cases; (7) typhus, where there is close resemblance to typhus fever (this type is often practically identical with typhus fever); (8) *pestis ambulans*, a very mild type, and *pestis minor*, which is often a forerunner of the more serious forms. Some authorities rather doubt whether this more or less simple adenitis is really plague.

The bacillus of Kitasato is the causal agent in all forms of plague. It is found in the blood, the excreta and various organs of plague patients. It is present in abundance in the sputum of patients with the pneumatic form of the disease, and in the buboes, but after suppuration in these is frankly established it is displaced by other organisms. It may be voided in the vomit, and is present in the urine and feces in advanced stages of the disease, and is with difficulty recovered from the blood, except in septicemic cases. The period of incubation is from thirty-six hours to eleven days, but generally under five days. This period is not characterized by any symptoms, and is apparently to be regarded as non-infectious.

At the time of the outbreak of plague in Glasgow, in 1900, I was an assistant in the Health Department there, and had opportunity of observing the several varieties in the cases which occurred during that epidemic. All the cases had certain groups of symptoms in common. There were the initial symptoms of headache and general malaise, with nausea and vomiting. Following on these there was an almost uniform complaint of pain in some one or other group of the lymphatic glands. In the milder cases the patient looked ill, out of all proportion to the amount of fever present. The buboes exhibited all degrees of severity, from the single slightly enlarged gland to the large and intensely inflamed mass of glands seen in the case of the solitary bubo, where, in one case, the redness of the skin and the edema of the neighboring tissues extended to about nine inches from the centre of the disturbance. The fever varied from the slight varieties, not exceeding 100 deg. F. to the severe fever of the true bubonic type of 104 and 105 deg. and over. In these more severe cases the

fever ran something like that in the better known typhus and typhoid fevers. Crisis was present in all the severe cases and occurred from the twelfth to the twentieth day. A description of the clinical aspect of one of the first cases that came under our notice may be of interest. This case has been so well described by Drs. Brownley and McClure that I cannot do better than quote their report of it, which appeared in the *Lancet* of September 8th, 1900:

“Patrick Malloy, aged 21, was discovered and admitted to hospital August 25th. On admission this patient looked extremely ill. The face generally was of a greyish color, with a more marked pallor about the mouth. The expression was distinctly anxious, there was marked knitting of the eyebrows, the eyes were widely open, and the conjunctivae were slightly congested; the respirations were slow, some eighteen per minute; the skin was hot and dry, and was covered with a faint purplish mottling most marked across the lower part of the abdomen, the arms and the buttocks. The tongue was moist and covered in the centre with a thick greyish fur, while the edges were clean and red. There was no congestion of the fauces. There was in the upper part of the deep cervical chain a swelling composed of one moderately enlarged and several slightly enlarged lymphatic glands. The tissues surrounding these were markedly infiltrated, and the skin was reddened and edematous. Manipulation of this swelling was evidently very painful. There was no enlargement of the glands in the right cervical region, or of the superficial chain on the left side. The right axilla was filled with a large mass evidently composed of lymphatic glands embedded in edematous cellular tissue. Here, again, the skin was red and edematous and movement of the arm, or even the lightest palpation gave rise to exquisite pain. In the left axilla a few glands were slightly enlarged, but most tender. No enlargement of glands was apparent in either groin. Temperature was 103.6. The pulse was very soft and easily compressible and numbered 128 per minute. The lungs revealed nothing noteworthy on further examination. The cardiac sounds were pure, the first sound being rather weak. The abdomen was not distended and was neither painful nor tender. There was no apparent enlargement of either liver or spleen. Exploratory puncture of the glands of the axilla was performed, and an immediate examination of films prepared from the blood withdrawn revealed the presence of considerable numbers of bacilli, morphologically identical with the plague bacilli. On August 26th the general condition of the patient remained much the same, though respirations were more rapid, numbering 28 per minute, but the local conditions have undergone marked alterations. In particular the lymphatic glands of the left side of the neck before mentioned were much more

enlarged, and the superficial glands on that side were now considerably involved. Late in the afternoon the glands in the left groin were easily palpable and slightly tender. The edema in the right axilla was more extensive, involving the anterior border. The spleen was found to be enlarged to percussion, though not palpable below the costal margin. The temperature at 6 p.m. was 102.4, and at 6 a.m. 104.4. The pulse in the morning was 112, and in the evening 132. On this evening the glycerine agar cultures made after puncture of the glands on the 25th and incubated for 24 hours at 37 deg. C. were examined. There was a faint surface growth composed of minute, whitish translucent colonies. Cover glass preparations were made from this growth and stained with an aqueous solution of gentian violet. These showed the presence of a pure culture of a short bacillus with rounded ends, tending to run in pairs, and showing well-marked bipolar staining. The bacillus was decolorized by Gram's method. The character of the culture and the morphological appearance of the bacillus and its staining reaction confirmed the diagnosis made from the examination of the films on the 25th that the organism under consideration was the bacillus pestis. On August 27th the local conditions had, if anything, advanced, but the general condition of the patient was rather better. There was a little less mental obtuseness, though it was still with great difficulty that he could be got to show his tongue. This improvement, however, was not maintained. By midday the patient was cyanosed and the pulse was weaker. He sank rapidly and died at 3.35 p.m. On making a post-mortem examination the only additional glands found enlarged were those in the upper mediastinum."

In regard to the prophylactic measures it will, I think, suffice to tell of the work that was actually done along this line in Glasgow at the time of this outbreak. The operations and mode of procedure were detailed by our chief, Dr. A. K. Chalmers, and as two special assistant doctors for plague work were taken into the Health Department, we were able to carry the work out very thoroughly, and as is well known, the after-results bear evidence as to this. Immediately the diagnosis of plague was made a meeting of the Health Committee of the corporation was held, and, by advice of Dr. Chalmers, a considerable area surrounding Thistle Street, the scene of the plague outbreak, was deemed infected. It was then reported that plague existed in the district with boundaries well outside of the area in which the cases had been found. It was explained that it would be desirable to use special sanitary measures in order to prevent the spread of the disease. The following measures were immediately taken:

1. In each "land" from which a case was removed, the lobbies, staircases, common passages, and each house was disinfected and

cleansed by the sanitary department, and the cleansing department made special arrangement for the free removal of garbage and hosing out the courts and areas.

2. The infected district was defined as a special cleansing area, and arrangements were made for a thrice weekly emptying of ash pits, lime washing thereof, hosing of courts, special removing of rubbish, etc.

3. The medical inspection of the district was organized and carried out by the Sanitary Department, with the assistance of two physicians added to the staff, and inoculation with anti-plague serum was offered free of charge, where deemed necessary.

4. A special sanitary inspector for dirty houses and stairs, and over-crowding of houses was instituted.

5. Rat catchers were employed for service within the said district.

6. Hand-bills were posted within the district directing the attention of the public to the fact that immediate medical attention could be had from the Sanitary Department, on communicating with it through the nearest police office or station. As members of the health staff we now had to examine all infectious and suspected cases in the above-mentioned area. Every infected house was denuded of its clothing and bedding, the furniture was thoroughly fumigated with sulphurous acid, the walls and ceilings white-washed, the floors and woodwork washed with carbolic acid solution, and this was followed by a thorough disinfection by formalin. Wearing apparel was treated with a solution of corrosive sublimate, and all beds were either treated in the steam disinfector or else destroyed. Staircases, landings, and lobbies leading to infected houses were white-washed, and much chloride of lime was used. All the ash-pits and privies of the city were lime-washed. Two reception houses were put into use, and later another was added, where contact cases were sent and kept for observation for twelve days. These proved of great value, for we detected in these several cases of plague. All physicians and nurses connected with the work of the plague hospital and health staff were inoculated with 20 cubic c.c. of Yersin's serum, also all contact cases were treated in a similar manner. Haffkin's prophylactic was not used as most of us had been in contact with the cases, and especially as there is considerable constitutional reaction when this serum is used. The further prophylaxis we used at the hospital, reception houses, and private houses, up to the time the patients were removed to hospital, and the contacts taken to the reception house was to see that an acid solution of 1-500 perchloride of mercury was in plenty. All sputum, urine, and excreta were received in vessels containing this, while a solution of 1-1000 strength was used in vessels for soaking soiled clothes, disinfecting cups, spoons,

etc., for washing the doctor's and nurses' hands after handling the patient. Nothing from the patient was discharged down drains without being thoroughly mixed with an abundant quantity of this disinfectant, and retained in it for two hours. This, of course, was principally to prevent rats in the sewers from becoming infected and carrying the disease, and it was quite important that we should not put plague bacilli into the River Clyde. Where deaths occurred a sheet soaked in strong perchloride solution was wrapped round the body and carbolized sawdust put into the coffin. Of the ships that came into the harbor, we examined only those from India, or from plague-stricken ports. Our examinations consisted of a rather severe pinching and squeezing over the gland area in the axillary and inguinal regions of the members of the crews. Then for departing ships we conducted a similar examination and disinfected the forecabin and crew's quarters to give the ship a clean bill of health. Of course, if any case of plague had been present on any ship a much more thorough disinfection would have been necessary.

There were many other details observed and carried out, but it is unnecessary for our present purpose to go into a further description of them.

#### SOURCES OF INFORMATION.

1. Indian Plague Commission, 1898-9, Minutes of Evidence.
2. Bombay Plague Report.
3. *British Medical Journal*, September 16th, 1899, Professor Simpson, F.R.C.P.
4. Transaction of the Epidemiological Society of London, N.S., Vol. 16, 1896-7, Dr. Cantlie, on the Spread of Plague.
5. Bubonic Plague, Montenegro.
6. Twenty-eighth report of the medical officer of the Local Government Board, England.
7. Bubonic Plague, Treasury Department, Washington, Dr. Wyman's pamphlet, 1900. Surgeon-General J. N. Eager's pamphlet, 1908.
8. German Empire Directions for Combating Plague.
9. Dr. A. K. Chalmers' Report on the Glasgow Epidemic, 1900.

## X-RAYS AND CANCER

BY CHARLES R. DICKSON, M.D.,

Physician in Charge of Department of Electricity, Toronto General Hospital, etc., Toronto, Can.

NOTHING very novel or even original will be found in this quite unpretentious contribution to a most interesting subject, no new or startling theories are to be propounded, no discoveries set forth, but only a few thoughts merely, which have probably occurred to everyone who has employed the X-rays either as a diagnostic or a therapeutic agent at all extensively, or who is familiar with the literature on the question.

There are perhaps very few deviations from the normal condition about which we know less than we do about cancer, in spite of the vast amount of research which has been expended upon the subject, and there are few diseases which more frequently defy our most cunning devices and resist our best efforts to combat. Fortunately, we are not always beaten in the struggle.

Can the X-rays throw any light upon the subject of cancer? Possibly they can. Certainly they suggest to us ideas which may be of some value.

In the early days of the use of the X-rays we knew very little about them beyond the fact of their power to penetrate tissue more deeply than other rays with which we were more familiar. Our attention was chiefly directed to their ability, not only to penetrate tissues in other respects opaque to light rays, but also to produce certain changes in chemical substances after having passed through such tissues, such as the ordinary changes produced on a photographic plate by the action of light. This power we utilized in taking radiographs for diagnostic purposes.

Another characteristic noted was the production of fluorescence in certain substances, such as calcium tungstate and platino-cyanide of barium, after passing through otherwise opaque tissues, and as certain portions of the tissues, notably denser portions such as bone, absorbed a relatively larger proportion of the rays than did the softer tissues such as flesh, fluorescence was more actively excited by rays which had passed through flesh merely, than by those which had passed through bone.

Acting upon this characteristic, screens were devised coated with a fluorescing substance, and were held against such region of the body as we desired to examine, while the rays were allowed to pass through this region from the opposite side; the parts of the screen opposite bone fluorescing to a lesser extent than those opposite flesh only, an apparent shadow of the bone was cast upon the

screen, due to the difference in intensity of the fluorescence, just as the parts of our photographic plate lying under fleshy portions of the body were more vigorously acted upon by the penetrating X-rays than those parts lying under denser tissue, thus permitting a contrast between bone and flesh when the plate was developed.

For convenience in using these screens the deadly fluoroscope was contrived, the screen active side uppermost constituting the bottom of the apparatus. The sides of the contrivance shutting out all extraneous light from the eyes of the observer, permitted him to contrast the varying degrees of intensity of fluorescence on the screen to the greatest advantage, and as the fluoroscope was much simpler to use, and was altogether more convenient, and often permitted a much more rapid diagnosis in such cases as suspected fracture, for example, than did the taking of a radiograph and the developing of it after taking, it was very popular with the early users of the X-ray.

We knew that we were dealing with an agent of great power, but we did not realize that it was capable of exerting any deleterious influence upon tissues exposed to its action, in fact such effects were ridiculed by many; certainly no one thought for an instant of trying to protect himself from any possible injury.

One of the earliest results of repeated exposure to the action of the X-rays that was noticed was the effect upon the hairs of the back of the hand. X-ray machines in the early days were frequently exhibited about the country as curiosities, and the enterprising exhibitors coined many a penny by permitting one to look through their hands, as they expressed it, by means of the mysterious fluoroscope, and as the back of the hand was usually the part nearest to the Crookes' tube, that was the part first to be affected.

Such exposures were for a very brief period only, but they were frequently repeated, so that the total amount of exposure during a day was quite considerable.

When X-ray machines were first manufactured for the medical profession the salesmen were naturally enough very zealous in setting forth the merits of their respective apparatus, and here again the hand was the part usually selected as most convenient to illustrate the degree of penetrability of their tubes, or some special feature of the apparatus. Such salesmen usually paid the penalty before long. In the case of some extra zealous ones, the face was likewise markedly affected.

But the showman and the salesman were not the only victims of misplaced confidence, for about the same time several practitioners, who were employing the X-rays as a diagnostic agent, had some rather disagreeable and alarming experiences with patients who were subjected to prolonged exposures to the X-rays in the endeavor to secure clear and definite radiographs in doubtful conditions.

Among the untoward results experienced by such patients were a dermatitis of varying degrees of severity, stubborn and resistant to the hitherto accepted methods of treatment, necrosis manifested by ulcers involving varying depths of tissue, and likewise most obstinate in healing, and many other varieties of the now well-known so-called X-rays burns.

Nor did the medical profession itself escape many a bitter personal experience of the power of X-rays to not only penetrate tissues, but also to act in an alarming manner on such tissue under certain conditions.

Many of the profession were in the habit of estimating the degree of penetration possessed by the tube by holding the hand in front of the excited tube and viewing the "shadows" of the bones through the fluoroscope. As this method was very easy to carry out, and the density of the shadow of the bones was a capital criterion of the condition of the tube, the manœuver was of frequent occurrence.

Shortly, however, it was noticed that the skin upon the back of the hand so used became dryer, in fact often quite leathery in appearance, and that small warty growths were to be seen, scattered about the surface; and the same things happened to the other hand which held the fluoroscope before the tube. Sometimes an acute dermatitis was the first symptom of trouble, but it was not always necessary to have a dermatitis before our attention was called to these things.

Much else happened to the luckless operator, and presently men began to lose a finger, or a hand, or an arm, and then some one died as a result of being exposed to the long-continued, frequently-repeated irritation of the X-rays. Gradually the death list grew, and several men of eminence in the medical profession, and some leading manufacturers of apparatus, were numbered among the victims, martyrs to the sacred cause of science.

After a number of practitioners had become affected to a greater or lesser extent by the X-rays, they began to compare notes; much was also written upon the subject, and a great deal of valuable information was thus collected, which is now a matter of record.

It was found that everyone was not equally affected by exposure to the X-rays, but that the degree of susceptibility to the influence of the rays varied considerably with different individuals, that there was much disparity in the rapidity with which untoward symptoms appeared and developed, and that some apparently recovered more rapidly than others, that all sufferers did not succumb, but many years were necessary to accomplish recovery, and that even then some of the results were still apparent, that the parchment-like appearance of the skin persisted, that the nails

were still striated, but that apparently there had been an arrest in the progress of symptoms, and often a marked amelioration of former conditions.

The symptoms suffered by those who succumbed were the customary symptoms of cancer, the course run by the disease was the customary course of cancer, hence it is not to be wondered at that many operators have reported the development of epithelioma on the sites of X-ray dermatoses, and also noted the peculiar tendency to hyperkeratosis, similar to the senile keratosis, and like it with a marked tendency to epitheliomatous degeneration.

Much has been written upon this very interesting subject, especial credit being due to Freund, the father of Roentgen therapy, for his laborious research which has been so well set forth in his "Radio-therapy," a work which has proved a veritable gold mine for many an author since.

Pusey and Caldwell, in their "Roentgen Rays in Therapeutics and Diagnosis," also present a lot of statistics, citing amongst others E. A. Codman, and giving a table collated by him, showing injury from an exposure of 0.08 of a minute at one inch distance, while in another instance it took 240 minutes at one inch distance. Another table by Codman shows that while in some instances signs or symptoms were noticed within twenty-four hours, in several cases none were noticed until after four weeks or more had interposed. The same authors cite Kienbock as stating that the mucous membranes react most rapidly to the ray.

Among many others who have collected statistics bearing upon these questions is Kassabian, himself a sufferer for some time from the results of excessive exposure to the X-rays. In his work, "Electro-Therapeutics and Roentgen Rays," he has much of interest, and gives us a partial list of those who have paid the penalty of excessive zeal and lack of precaution in studying and utilizing the action of the rays.

But there is a brighter side to the story, for the occurrence of dermatitis and epilation incident to the use of the X-rays in diagnosis led to their employment in therapy, although the price paid in dead, maimed and disfigured practitioners seems a pretty high figure for the discovery, valuable as it has proved.

Much theorizing has been done as to the actual physiological effects of the X-rays. In his work on "Radiant Heat and Light," William Benham Snow reiterates a theory which he set forth in an earlier work on "Static Electricity," of "One effect in particular, which accounts for all, the contraction of cell protoplasm. . . . Whether the action is the influence upon the end plate of the neurons or upon the individual cells, it would be difficult to assert; but the latter is most probable."

In the same work Snow summarizes the results of the action

of X-rays based upon clinical observation in a manner well worth quoting somewhat at length:

"The effects of the X-rays upon the normal tissue are (1) to induce normal activities, due to the vibratory effect of the rays, or of the ether in the presence of the rays. (2) That these effects with short exposures at proper distances with high vacuum tubes induce activity of normal tissue cells, which, in some cases, supplant abnormal tissue elements without evidences of disintegration. (3) That exposures destroy only the abnormal tissues unless they be too prolonged. (4) That abnormal tissue thus exposed breaks down and disappears through the natural channels of absorption or by sloughing. It has been shown in the writer's experience that tissues of low vitality are always the first to break down.

"It is probable that the vitality of all tissue is lowered by cutting off the blood supply, as well as by inhibition induced in the cells. *Naturally*, under such circumstances, tissues of low vitality are the *first* to break down. It is also well established that the tissues of debilitated patients do not resist the destructive action of the rays as do those of normal individuals, which confirms the theory.

"It has also been demonstrated that malignant tumors in the aged or infirm are more likely to soften and break down than in normal individuals, which confirms the view that when, for any reason, the tissue resistance is lowered the tissues break down. The violent toxemia occurring under such conditions is not due to extension of the malignant process, but to the autoinfection arising from absorption of toxins present in the broken-down structures.

"This effect upon circulation and nutrition when employed to the extent of destroying malignant growths is at best a dangerous one, and demands careful attention to the management of details and a knowledge of their consequences.

"The cumulative action is a striking feature of the effects of the rays, and demonstrates the more or less persistent condition of contraction which follows a series of exposures and explains the diminished metabolism after a long exposure or series of exposures.

"It would seem, therefore, that the logical explanation of the action of the X-ray when nearby, prolonged, or frequent administrations are given is, that the exposed structures contract at the expense of nutrition and produce, when carried to a certain degree, necrosis of the part. This theory accords with the therapeutic results obtained from nearby and prolonged exposures.

"The stimulating or tonic effects of the Roentgen ray, induced by short exposures or with a high-vacuum tube at distance of six-

teen to twenty inches from the anti-cathode, is probably due to the disposition of vibratory influences of the rays both to overcome local stasis, restoring tone to the muscular coats of the arterioles, and, at the same time, to induce a more active local metabolism."

These views seem very rational and afford us a good working hypothesis; they are probably nearer the truth than any that have yet been set forth, and for that reason are presented at length.

The X-rays when used in moderation may have a tonic or stimulating effect, but, like many another stimulant or tonic, if the use is prolonged, or often repeated, the action is markedly that of an irritant, and an irritant of a very pronounced character. It is chiefly in the role of an irritant that the services of the X-rays are sought therapeutically, being too unsafe a remedy to be trusted as a stimulant, except to a very limited extent.

Without further delving into the subject many very suggestive ideas thrust themselves upon one in this brief and altogether incomplete consideration of the ray's work, only some of which must suffice for our present purpose.

For instance, we have a certain definite form of irritation, causing a well defined—for the most part—train of symptoms, symptoms most closely resembling those of cancer; and as if this were not enough, we find dermatoses caused by this irritation prone to develop epithelioma; and we likewise find as a result of this irritation, hyperkeratoses with a marked tendency to epitheliomatous degeneration. These circumstances point strongly in favor of the irritation theory as to the cause of cancer, and should aid us still further in our study of the cancer problem, for the behavior of the tissues under the ray should teach us much concerning the behavior of tissue affected by cancer.

The testimony of the tissues would seem to favor the theory of a protective mechanism in the body, striving to ward off cancer, and to repair its ravages. It should afford support also to the observations concerning the arrest of malignancy on cessation of the causative irritation. And it should give us a clearer idea of what we may hope to accomplish in the way of treatment.

At the present time our efforts in using the X-rays as a therapeutic agent are largely restricted to the attack upon superficial growths, many of which are distinctly amenable to such measures. But even in the case of the deeper seated growth we sometimes retard its spread, or even cause it to diminish markedly in size by judicious treatment, and add very greatly to the comfort of the patient, perhaps prolonging life.

## CANCER OF ESOPHAGUS

BY W. H. PEPLER, M.D., L.R.C.P. (LOND.), TORONTO.

*Mr. Chairman and Fellows*,—I feel some diffidence in presenting these notes, as you know cancer of the esophagus is by no means a rarity, McCrea giving 9 per cent. of all cancers esophageal, Von Hacker 5.3 per cent. Since the more general use of the X-rays and esophagoscope many cases are being brought to light that would have been overlooked without their aid. Still in this particular case some interesting features prompted me to report it, and to add a few comments thereto.

H. C. A., Cuban, 37 years of age, was referred to me for treatment January 2nd, 1909. His father died at 43 years of age from probably epithelioma of the lip, as the history was that of a sore on the lip, followed by swelling of glands of neck. Family history otherwise negative. Patient born in Cuba, of Cuban parents. He has lived there and in Florida up to twelve years ago, when he came to Canada.

Had smallpox at three years of age. When about the age of twelve years he received a blow in the region of the stomach from a baseball bat, which caused vomiting and pain in the stomach, lasting two or three days. He contracted gonorrhoea seventeen years ago; denies any history of lues; was never addicted to the use of alcohol; a moderate smoker of cigars, and is unmarried.

Patient has never complained of any stomach trouble up to four months ago, when he felt a slight ill-defined pain in the xiphoid area, usually in the morning before rising, occasionally during the day, but never referred to the taking of food. It is dull in character, lasting about half an hour, and often relieved by passage of gas. For nearly three months he has noticed a sensation after eating, as if the food did not quite reach the stomach, and then returned a short distance, but was never expelled.

At first only solids, but lately fluids also occasioned this symptom. His appetite always excellent. No great thirst. Occasionally he brings up a little mucus, but no blood. Has lost twelve pounds during the last four months. Patient has dark brown skin, shows the scars left from smallpox, principally on face and neck; is somewhat anemic; has bright, intelligent expression; height, 5 ft. 5 in.; weight, 122 pounds; gait, easy and steady. Speech and voice, natural. Pupils are equal and react regularly. Visual fields normal. Patellar reflexes are present and equal, and he can stand quite well with his eyes shut. No ptosis, nor hoarse-

ness. Pulse, 75 regular and soft; temperature, normal; urine acid, 1030, no albumin nor sugar; blood, hemoglobin, 55 per cent.; R. B. C., 4,012,000; W. B. C., 7,600.

Examination of the thorax and abdomen negative. No supra-clavicular lymph nodes apparent. There is a soft fibroid situated in left nares anteriorly. Teeth and buccal mucous surfaces healthy. Larynx and vocal cords natural. Tongue, pale and slightly coated posteriorly. No odor to the breath.

The only subjective symptoms are the indefinite pain, and the sensation after eating of the food returning a short distance, as mentioned above. He has never been able to make himself vomit, although he has tried on several occasions.

On January 4th, 1909, at 8 a.m., patient took a breakfast of one soft boiled egg, some rice, a cup of tea, and at 9 a.m. I passed a soft rubber stomach tube, size 33, French, the distance of 53 cm. from the teeth-line, but nothing came out through the tube by suction or otherwise; a small quantity, perhaps 2 cc. of yellowish chyme mixed with mucus ran out alongside the tube which, on analysis, showed free HCl. Water was then poured into the tube, which syphoned out unchanged. This was repeated several times with the same result. Only about half a pint could be made to enter tube each time. I therefore concluded that the tube had not entered the stomach, but was either in a diverticulum, or curled up in a dilatation of the esophagus with an obstruction below. The latter proved correct, for on withdrawing the tube, the kinked end straightened out as it reached the upper part of the throat. A soft rubber tube, No. 24 French, tapering at the point, was then introduced, and after some manipulation slipped into the stomach. About 100 cc. of brownish-yellow chyme was expelled through the tube, analysis of which showed free HCl; total acids, 10; no lactic acid. Stomach was then washed out with saline and tube withdrawn. The patient was given a glassful of water, and after an interval of five minutes the large soft tube was again passed, but no water returned. The tube on this occasion also became kinked, and could not be made to pass the obstruction. The water, however, had passed into the stomach. The secondary deglutition sound was tested, and proved not to be delayed. Neither succession nor respiratory sounds could be elicited.

January 6th at 8 a.m. patient given an Ewald breakfast, and at 9 a.m. the stomach contents were obtained, consisting of about 100 cc. of brownish chyme, with a few particles of bread. The analysis made by Dr. Rolph, of the University Laboratory, showed free HCl; total acidity, 17; no lactic acid; no Oppler-Boas.

On withdrawing the tube two or three drops of blood were noticed; a smear taken from the end of the tube showed red and white blood cells, also some flattened epithelium.

January 13th, in consultation with Dr. Cummings, the patient

was given a wafer of bismuth and examined with the X-rays. The bismuth was seen to lodge just above the cardiac orifice of the stomach. A larger quantity of bismuth in water was afterwards administered, and the fluoroscope revealed the presence of the bismuth in a pear-shaped dilatation of the esophagus, with the larger end downwards; the dilatation appeared to be about four inches long and situated just above the stenosis. A steel olive tipped bougie was also inserted as far as the obstruction, and could be traced down to the stenosis by means of the screen. These tests were repeated later and photographs taken.

January 15th the patient was given morphine and hyosine hypodermically, and examined with the esophagoscope. A small necrotic nodule was seen on the anterior wall of the esophagus nearly 40 cm. from the teeth-line. A small piece was removed from this nodule by means of forceps, and on section showed nests of irregular, basal-celled epithelium in a stroma of light fibrous tissue, also a quantity of bacilli and blood present. A diagnosis was then made of esophageal carcinoma situated at or near the cardia.

January 18th, patient weighs 117 pounds, and complains of occasional pains in the epigastrium radiating towards the right shoulder. Appetite remains good.

The treatment has consisted of dicting and occasionally lavage. The passage of the tube seems to lessen the dysphagia.

It was my intention last month to present this case in a comparatively early stage, but since then certain symptoms developed that necessitated a gastrostomy somewhat earlier than was first intended.

The dysphagia increased, and the regurgitation became almost constant after fluid nourishment; the patient showed signs of exhaustion, and rapidly lost weight, now weighing only 108 lbs. We, therefore, decided that a gastrostomy was necessary, and the invaginating operation recommended by Senn, Jr., of Chicago, was performed by Dr. Cummings on February 27th, under a general anesthetic. Since the operation the patient has been much more comfortable, taking nourishment freely through the tube and gaining strength. He reports that he has drunk coffee and tea by the natural channel without regurgitations, which I think very interesting, as it proves that the rapidly increasing stenosis and regurgitation during the last month were partly due to spasm, which has been relieved by the operation. He now chews different meats and enjoys the taste, and swallows the juice, and even puffs away at his favorite Havana once more. I am, therefore, hoping that his most distressing symptoms will be alleviated for some time to come.

#### THE ETIOLOGY OF THIS CASE.

Cancer of the esophagus under 40 years of age is comparatively rare, although cases have been reported under that age. It has

been observed as early as 19. Seventy-one per cent. occur after 50. Was the blow in the stomach a factor in this case?

Traumatism seems to play an important part in carcinomas of the esophagus. It is a remarkable fact that the three favorite sites, viz., near the cricoid, at the bifurcation, and the hiatus are especially prone to irritation from their anatomical arrangement. Males predominate 3 to 1, with no reasonable solution of this yet given. Is heredity of any importance in this case? According to the latest report from the Imperial cancer research, it may be thrown out.

#### THE SITE AND HISTOLOGICAL FINDINGS.

Von Hacker, of Gratz, mentions 100 cases diagnosed by means of esophagoscope and microscope, with cervical, 10; bifurcation, 10; hiatus, 30; cardiac orifice, 20, including 31 cases of gastrostomy; 13 cervical, or 9.92 per cent.; 53 bifurcation, or 40.46 per cent., and hiatus 31, or 27.49 per cent. Mackenzie, however, gives the upper portion as the most frequent site.

The type of epithelium is generally squamous. Occasionally they are spheroidal, rarely columnar primarily. Six cases are cited by Hewlett of the latter.

Von Hacker mentions an interesting case where glandular cancer of cardiac end of the stomach extended up the esophagus beneath the mucous membrane; and on autopsy found a squamous-celled cancer at the hiatus, with the glandular cancer immediately beneath it. The latter could be traced to the stomach.

F. W. Higgs mentions a case of squamous-celled cancer situated just above the cardia, with a secondary squamous-celled cancer in the stomach two inches from esophageal opening. There was healthy mucous membrane between the two growths. This was undoubtedly a case of secondary implantation. These epitheliomata usually originate in the epithelial lining and spread to submucosa, infiltrating the muscle, and may circle the lumen. They ulcerate early, but metastases are rare.

A gastric cancer may become esophageal, but one primarily in the esophagus rarely grows beyond the cardiac orifice. Carcinoma of the cardiac orifice is really esophageal.

#### THE PAUCITY AND LATENCY OF SUBJECTIVE SYMPTOMS.

Dysphagia may be slight or absent throughout the whole course of the disease, as ulceration is early, thus preventing much or any stenosis. The stenosis is often caused as much by spasm as by the growth. Regurgitation is usually given as a common symptom, but it generally appears late when the growth is situated in the neighborhood of the cardia, or when there is much dilatation of esophagus. Pain is seldom a marked complaint in the earlier stages, and is generally transferred and indefinite in character throughout.

## DIFFICULTIES OF AN EARLY DIAGNOSIS.

A cancerous stenosis at the lower portion of the esophagus may be confounded with a diverticulum of the esophagus, or cardiospasm. Diverticula are generally situated higher up, have a long history, 10 or 12 years of periodical retchings and regurgitations of foul-smelling foodstuffs. The sac is often visible, and pressure can empty it.

Chronic cardiospasm is usually a disease of neurotics. The resistance varies in intensity at different times; is alike to small and large sounds. If dilatation of the esophagus is present, as so frequently occurs with this condition, it can often be diagnosed by giving the patient a glass of water to drink, and after an interval of four or five minutes, the tube is inserted into the esophagus and the water returns through the tube in about the same condition as when drunk, not mixed with food.

Aneurism of the aorta usually gives rise to obstruction of the esophagus in the neighborhood of the bifurcation.

All the above-mentioned conditions can generally be definitely diagnosed by means of the X-rays and esophagoscope.

In all obscure and obstinate diseases of the esophagus and stomach I would urge the early and more general use of the stomach tube and sounds as a simple and efficient means towards an early diagnosis.

## PROGNOSIS.

A word about the treatment of these cases, undoubtedly of paramount importance to the patient, but here it can be dealt with in a few words.

Resection and esophagostomy have been done in cancers situated higher up.

Gastrostomy is recommended in cancers of lower portion if body weight is decreasing, even although the patient is able to swallow fluids well; but it should be undertaken before emaciation and exhaustion are established.

After this operation the growth is less rapid, the pain relieved and life is usually prolonged one or more years.

They do not seem to crave for the taste of food.

Von Hacker saw at Innsbruck several cases rapidly recover and able to work for months.

Sir Frederick Treves mentions a case that remained well for three years.

Dilatation by bougies and permanent tubage with strings passed out through the mouth relieve for a time.

I saw radium used by Max Einhorn with some benefit, but the duration of my observation was too limited to judge of any definite results. Max Einhorn speaks favorably of this form of treatment.

## A CASE OF BRAIN TUMOR

BY H. S. HUTCHISON, M.B.,

Demonstrator in Clinical Medicine, University of Toronto.

J. C., male, aged 29, was admitted to St. Michael's Hospital, complaining of severe double frontal headache, lack of sensation on the right side of the face, dizziness and staggering while on his feet, vomiting, and at times double vision.

*Previous History*—Patient was married five years ago, and six months later, according to his account, he contracted syphilis from his wife, with whom he lived for two years in all, and who had one miscarriage during this time. He was under treatment for six months, but had no rash, or sore throat, etc., the prominent symptom being falling of the hair.

His habits were bad.

*Present History*—Two years previous to admission to hospital, patient felt at times a dizziness which caused him to stagger. This would occur in short attacks, and he was troubled at the rate of about two or three a week. One month previous to admission to hospital severe frontal headache developed, bilateral in nature, and the dizziness and staggering became more marked, and he began to vomit. At times he noticed that he could see a double image.

*Examination*—Patient slept a great deal when left alone. He was fairly alert on being interrogated, answering questions slowly and deliberately, and with a plaintive tone of voice. His memory seemed to be very good, and he considered it good himself. His temper was even and good. His speech was good for the most part, but a slight syncopation was noticeable in difficult passages.

*Cranial nerves*—

*Olfactory*—Sense of smell was not acute at first, later was greatly blunted.

*Optic*—Continuous vision was impossible on account of the onset of headache. He could for a few moments at a time see distant objects, and could read fine print. His color sense was good. The discs showed a double optic neuritis of equal extent.

*Oculo-motor*—Slight ptosis was present in the right eye.

*Trigeminal*—Complete anesthesia was present as far as tactile and pain sense go, but patient had a continuous itching sensation which caused him to pick at a large atrophic ulcer which had developed on the right side of the nose. The skin over the lower jaw remained sensitive. The right set of the muscles of

\*Read before the Academy of Medicine, February, 1908.

mastication were not affected at first, but later were considerably weakened, so that the jaw was deviated to the weakened side, and the force of chewing was lessened on this side.

*Abducent*—The right external rectus was weak.

*Seventh*—The right cheek was paralyzed.

*Auditory*—There was marked loss of hearing on the right side, the watch not being heard when in apposition to the external meatus. The drum was normal. A tuning fork could be heard over the mastoid, or over the vertex, for its normal length of time, but only very faintly and briefly at the meatus. The deafness was evidently nerve deafness, and not central, or due to local disease.

The chorda tympani gave evidence of disturbance in that the mouth was always markedly dry, the tongue being heavily furred.

*Glosso-pharyngeal*—Taste sense was distinctly impaired, but a unilateral distribution of this could not be made out.

*Vagus*—The vomiting was of a nervous type in that it was projectile, though it came on usually after the taking of food. There was sometimes nausea, but often not, and the act always relieved the headache.

*Spinal-accessory*—The head could not be rotated to the right as readily as normally, and the right shoulder could not be shrugged, as normally.

*Hypo-glossal*—The tongue was not deviated to the affected side, as might have been expected, but rather seemed to go to the left. The pushing of the jaw to the right made this observation difficult.

*General motor functions*—Patient had control of all muscles except those of the right face, mentioned above, but in walking or standing a marked ataxia came to bear.

*Co-ordination*—There was a marked coarse ataxia, the legs being held wide apart, the feet being lifted high. On some occasions, however, the patient could walk with surprising steadiness. Romberg's symptom was present, the patient falling if left unsupported. In the finer movements, as those of the hands, there was a finer inco-ordination.

*Muscle sense* was normal.

*Reflexes*—The eyes reacted throughout to light, they also accommodated. The knee-jerks were slightly increased, ankle clonus and Babinski's sign were not given.

*Circulatory System*—The characteristic high blood pressure, in the peripheral vessels, of a tension in the cranium was given, the pressure on several occasions being 212 mg. of mercury.

One morning he was found to be dead in bed, the occurrence having taken place without attracting the attention of those within a few feet of him.

The diagnosis of intra-cranial tumor was made from the symptoms of optic neuritis, headache, nausea and vomiting. It was localized to the right lobe of the cerebellum or to the right side of the pons projecting into the cerebello-pontile angle, on the following points: The marked involvement from the first of the trigeminal, facial, and auditory nerves, in their lower neuron part, as proven by the test applied to the auditory, and by the practical impossibility of one lesion covering the widely separated cortical areas of these nerves; the subsequent discovery of involvement of all the cranial nerves arising from medulla and pons; the marked dizziness and the marked ataxia (which latter could arise as result of involvement of the upper part of the crus cerebri); the marked presence of Romberg's sign, consequent upon the last two symptoms; the clear mentality; the absence of motor or sensory or other upper neuron implication of the cerebrum.

At autopsy, a tumor of the surface size of a fig was found projecting from the fore part of the right lobe of the cerebellum, and occupying the cerebello-pontile angle. The cerebellum on the right side was compressed so as to have its long diameter the transverse one. The temporo-sphenoidal lobe was hollowed out on its posterior surface, and the pons and medulla were displaced to the left. The tumor was of firm consistence, homogeneous appearance, and showed some appearance of contraction, which, with the history, led to a provisional macroscopic diagnosis of gumma. On sectioning, it was found to be a sarcoma of spindle cells, with areas of round cell structure.

In consideration of the syphilitic history, large doses of potassium iodide were being given, when the patient suddenly died. With a failure of the iodides, operative measures would have been adopted, and, in consideration of the marked localizing symptoms and with the employment of Frazier's special method of reaching tumors of the cerebello-pontile angle, such measures would certainly have been justifiable. The finding at autopsy of a firm, well-defined, and fairly small mass, indicates the amount of success that could have attended surgical procedure.

**ECONOMICS AND SUCCESS IN TUBERCULOSIS CRUSADE.**

Elsewhere in this issue we make a report of the Ninth Annual meeting of the Canadian Association for the Prevention of Tuberculosis. Prof. Adami's address is of such general interest that we present the major part of it herewith. Prof. Adami said in part:

The great problem before us in our generation is not how to cure or to arrest tuberculosis; that is the problem for the generations that have gone before. We cannot, indeed, say that it has been completely solved. There are constitutions so weakened, infections so intense, that so far no methods known to us are of any effect in stopping the ravages of this fell disease. These, happily, form a minority of the cases. Given an ordinary case, and that in not too far advanced a condition, we now feel confident that we can get the upper hand of the malady and render the patient once more a useful member of society. It is true that not a score of years ago the medical and the lay world had not learned to realize this. To-day the whole world is convinced that this is so. The great problem, then, is how to utilize this knowledge so as to stamp out the disease. That problem is an essentially pecuniary one—it is a problem both in the larger and narrower sense of social economy.

Here, briefly, are the main data or factors in the problem: The infection is singularly widespread throughout the community, and is conveyed in the main from individual to individual. Only when the disease is what we may term open—that is to say, when it attacks the lungs and provokes a discharge of bacilli—is it within the limits of possibility to eradicate it. What are the more economic methods? How can we ensure thorough action with the least cost to the community? For admittedly, if the disease and the danger of infection are so widespread, the cost of eradication must be a very serious matter. The disease is so widespread that, save for the benefit to the individual, it is useless to keep data for individual cases. So many centres of infection are thereby left untreated that no material benefit accrues to the community at large. The magnitude of the problem and of the work before us is appalling, and it is necessary that at the outset we should realize it.

A compilation of the examinations at post-mortems in general hospitals in Canada reveals that every other case shows evidences of having been infected with tuberculosis. The observations of Nageli and others show that in certain crowded communities of the old world practically every other individual who attains to the age of thirty bears evidence, slight or extensive, of having been affected. I do not believe that here in Canada conditions are quite

so extreme. It is amply sufficient for present purposes, however, to be able to lay down positive evidence that here at least one out of every two adults has experienced a tuberculous infection. The census of 1901 showed that 18 per 10,000 of the population were dying from consumption, and, as pointed out by Dr. J. H. Elliott, out of our present population of 6,500,000, over 777,500 are destined ultimately to succumb to the disease. Montreal statistics for the year 1908 give 945 deaths, or over 10 per cent. of the total mortality. Those Montreal figures show a definite reduction during the last seven years. For myself, I doubt if every case of death has been properly recorded; it is so easy and so human for the comfort of the survivors and for the sake of euphony to ascribe death to pneumonia or progressive emaciation. The problem before us in Montreal is, leaving out of account altogether the cases of arrested tuberculosis, how are we to deal with 2,800 active cases of the disease? Is it possible to accomplish anything? Those cases, it will be seen, divide themselves into two groups—those in which the arrest of the disease is still possible, and those that are incurable. The treatment of those groups is very different.

Thus in the first place we have Montreal, a community of between 400,000 and 500,000, in which at least 1,800 cases of active consumption exist. Naturally our first thought, upon establishing the League was that we should embark upon the sanatoria treatment. We knew how effective this was. A very short study of the problem showed us that to cope with the disease by means of sanatorium treatment was out of the question. The initial cost and the yearly expense would be far and away beyond what either the Provincial Government, the city government, or the charitable institutions, or all of them combined, could be expected to offer. Remember, I speak of conditions six years ago. Even at the present day the difficulties would, I am convinced, be insuperable. The only course open to us at first appeared to be a campaign of education. We compiled and distributed by the thousand leaflets in French and English, instructing the community as to the nature of tuberculosis and its prevention. Possibly we frightened some people; possibly for a time some of those already suffering suffered yet more, in fear of those in their neighborhood not affected. Nevertheless, we made it our aim and object to proclaim, first and foremost, that the disease is curable, and secondly, and with care on the part of the patient, infection is easily prevented. Thus we feel now that the first step has been accomplished; that in our community there is a rational knowledge of at least the elements of the tuberculosis problem. We very soon realized that this was inadequate, and the sanatorium method of procedure being ruled out on account of expense, we looked around to determine upon some other practical course to take to aid those in the earlier

stages of the disease. We determined to establish a tuberculosis dispensary. Such a dispensary, we found, could be run at a very moderate expense. We worked in co-operation with our city Board of Health. From it we received reports of every case of death from the disease. We also secured the services of one of the health inspectors, who was detailed to visit every home where a death had occurred, to disinfect it, report upon conditions there if necessary, and provide the family with literature. The city doctors were invited to report to the dispensary all known cases of tuberculosis, more particularly the indigent. The general hospitals, which do not accept consumption cases into their wards, co-operated by sending such cases to attend the dispensary, and city doctors were invited to send their indigent patients for treatment; and as the work of the dispensary became more widely known, patients with long-continued coughs presented themselves for examination. The work accomplished has grown steadily, until accommodation is altogether too restricted, and now at the psychological moment, generous donors—Colonel Burland and his sisters—have presented us with a fully equipped building, admirably situated in the centre of the city, which we hope to open in the early fall—a gift which will certainly represent not less than \$50,000.

But will a campaign of popular education or dispensaries master the disease? The dispensary can, it is true, ameliorate the condition of the patient in the earlier stages of the disease; it cannot cure. What it can accomplish is this: Through its inspectors it can detect the chief danger spots in the city, the region of overcrowding where whole families live in a single room, or those most fatal centres of infection, the dark rooms without windows opening upon the exterior and without adequate ventilation. It can be a potent factor in rousing public opinion and doing away with these hotbeds of infection. But this is not sufficient. The dispensary, as such, has no means of dealing with cases in which the means of a family forbid a patient from being isolated. Unless he is isolated, unless he sleeps in a separate bed and in a separate room, the rest of the family is constantly exposed to danger. I do not hesitate to say that these cases constitute the gravest problem in the whole situation. Could we effectively isolate the sick from the well, we would remove the great source of infection. It is a sheer impossibility to segregate all. Think of the cost of building and maintaining a hospital for 1,500 people, or even to provide for 100 male and female patients. To give each three months' treatment—and that is inadequate—would, cost of building apart, if the sanatorium were run at ordinary hospital rates, demand a yearly expenditure of more than \$70,000. This consideration of cost alone absolutely bars the sanatorium method as a wholesale system of solving the tuberculosis problem. And the

same considerations rule out the cheaper so-called shack system, even though the initial cost of building and some items of the cost of maintenance are very materially reduced to the extent that wooden huts are cheaper to build and maintain than a modern hospital building. There is, however, no material reduction in the cost of food or of the staff in connection with them.

I am arguing, you will see, not against the sanatorium as such, but against the sanatorium as an unduly expensive, and, in fact, an impossible method of fighting the disease at large. There is, I believe, no better method of treatment for those who can afford, or whose friends can afford, it, than to undertake a six or nine months' treatment. I would, in passing, call attention to the one great difficulty of running a sanatorium, that of not adhering to the primary object of such an institution of treating curable diseases. If the bowels of compassion of the committee of management be stirred, or political influence be brought to bear, there is terrible danger of the institution becoming silted up with hopeless cases, so that instead of being a sanatorium, it becomes a hospital for indigent incurables. I hold that the state and the municipality are bound to make provision for their maintenance, as private effort and charity have abundant field to exercise themselves in other directions.

The last few years have seen a notable advance in the treatment of consumption, and it has become fully realized that home treatment is perfectly feasible and possible, even in crowded cities like New York. Then there is the class method. This was introduced by Dr. Joseph Pratt in connection with the well-known Emmanuel Church of Boston. It has, in my opinion, the most in its favor and the least against it. It encourages self-help and discourages pauperism; it enthuses a patient with hope and confidence; it interests the largest number of individuals in the work of arresting the disease; it presents excellent results, and finally, it is the least costly and comes within the range of practical politics. To those not acquainted with it let me briefly indicate the broad outline of the scheme. As regards the treatment, it resembles the home method, in that it is conducted at the patient's home, but has these peculiar features. A given congregation assumes responsibility for the treatment of from ten to fifteen early cases of tuberculosis, appoints a committee to have charge of financial arrangements and to take a personal interest in the patients and their families, a doctor to investigate and choose the cases, and a nurse to visit and instruct them. Only those patients are accepted for the class who promise solemnly to carry out the treatment in all its details. Failure to do this entails dismissal from the class. When the condition of the patient has become satisfactory, he joins with the other members of the class in meeting

the doctor and the nurse once a week in some room provided by the congregation. Here each in turn reports the number of hours spent in the open air during the week, weights are taken, the gains compared, and a pleasant hour spent comparing notes of progress.

Emmanuel Church, Montreal, has followed the example of its namesake in Boston, and has established the first class of this kind in Canada. I would add that the patient so treated should be encouraged to regard expenditure made by the committee as a loan, to be paid back in instalments when his health has been regained. It must be realized that the incurable cases are the most dangerous. They can be rendered harmless when they can be given a room apart, and when the bed linen can be boiled and sterilized. When these things are not possible, then for the safety of the community the only place for them is in the hospital for incurables. As with the completely indigent early cases, I hold that the care of these patients is not a matter for private charity, but develops upon the state and the municipality. The municipality, whether aided by the state or not, is responsible for the care of these, as for all other highly infectious cases.

## THERAPEUTIC SERMONETTES

BY GEO. F. BUTLER, M.D.

Professor and Head of the Department of Therapeutics and Professor of Preventive and Clinical Medicine, Chicago College of Medicine. (Medical Department of Valparaiso College, etc.)

CONTRARY to the popular opinion, whooping-cough should not be left untreated. Much can be done to relieve the symptoms of the disease by proper treatment. During the first stage, especially if there is fever, 1/500 of a grain of aconitine may be given every half to two hours, according to the weight of the child. If there is any special reason why this drug should not be administered, such as cardiac weakness, or an idiosyncrasy, anemoinin may be given instead, in doses of grain 1/134.

I know of no one remedy which relieves the symptoms of whooping-cough so well as iodized calcium, or calcidin; 1/2 to 2 grains may be given every three hours, or 1/3 gr. every quarter-hour during the earliest formative and the catarrhal stages. Atropine is an excellent remedy, but to do any good it must be given in pretty full doses. It is especially useful for teething children, in the spasmodic stage, and when there is too free secretion. Children take preparations of belladonna well, even better than adults, and there is but little fear of its producing toxic symptoms. Atropine may be given in doses of 1/500 to 1/250 of a grain. If it disagrees, hyoseine may be substituted. Duboisine is an excellent remedy in small doses, and also gives prompt relief to the spasmodic cough. It answers better in summer than in winter. In other words, it is more efficacious in simple whooping-cough than when the disease is complicated with bronchitis. Codeine, chloralhydrate, or both, may be necessary to secure sleep and quiet the cough. Fresh air should be supplied in abundance, but drafts of air and cold drinks should be avoided as likely to induce coughing; and for the same reason all excitement, exertion and discomfort should be prevented. Nutritious and concentrated food should be employed, and when much emaciation is the consequence of the cough leading to vomiting, the best thing to be done is to feed the child immediately after he feels sick, with milk, beef tea, etc., so that some at least of the ingesta may be assimilated before the next attack comes on. Perhaps this is the most important part of the treatment of whooping-cough. Inhalation of the vapors from a Vapo-Cresolene lamp seems to lessen the severity of night paroxysms in some cases. The proper degree of urinary acidity for the alkalinity of the body fluids should be maintained. If the saliva becomes acid or the urinary acidity reaches the degree of

40° or above, "sodoxylin" should be given three times a day, in plenty of water. For the same reasons alkaline mineral waters and milk should be given freely. Digitalin and strychnine may be needed for cardiac support. The bowels should be kept freely open, and intestinal antiseptics administered if necessary.

As a tonic, after the acute symptoms have subsided, brucine, quinine ferrocyanide or the triple arsenates of iron, quinine and strychnine, may be employed.

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### A PARASITIC DERMOID

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BY C. F. MOORE, M.D.

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I DID not obtain the history of this case, other than that she had complained for some months of a central swelling in the lower abdomen, that had been enlarging and giving her a feeling of weight and dragging. Upon entering the abdominal cavity, a large cyst presented itself, lying free, having become twisted from its pedicle, and receiving its support by omental adhesions. It was quite easily separated from its bed, and when opened was found to contain a clear, watery fluid and a very large number of spherical pitted bodies of pale green color, about the size of small marbles. The appendix contained concretions, and was removed.

The omentum gives these dermoids their blood supply through the adhesions. The omentum is a protector in all cases, owing to the fact that in it the white blood corpuscles have a pure phagocytic action, and by this means endeavor to protect the body from ill effects by isolating or surrounding any foreign body or infection. White blood corpuscles in other structures do not possess this phagocytic action. Upon closing the wound, the layers of the abdominal wall were found densely matted together, so they were separated by scissors and united by a continuous figure-of-8 catgut suture, and the skin by a subcuticular suture. Four interrupted silk-worm gut retention sutures were previously introduced and tied after the incision had been closed.

The patient made an uneventful recovery, was allowed out of bed on the ninth day, and left hospital on the fourteenth day from operation.

## TORONTO GENERAL HOSPITAL CLINIC

The clinic on Saturday, July 3rd, at the Toronto General Hospital was conducted by Dr. G. W. Ross. The first case presented was one of tic douloureux. First, a tooth was attended to, and then a diseased antrum and ethmoid were treated, but without relief. Injections of doses of 7 minims of 80 per cent. alcohol were then given directly into the nerve branches, as they emerge from the infra-orbital and dental foramen. The result was fine. Varicous other cases were reported by other investigators. This form of treatment was infinitely better than the formidable operation of the removal of the Casserian ganglion.

Case 2 illustrated the lymphatic type of headache. The patient was a young woman who had been a persistent sufferer from the so-called congestive headaches. An investigation of the blood showed a deficiency of lime salts; the blood picture was practically normal. The clotting rate was considerably prolonged. This type of patient complains that she wakes in the morning feeling very tired; does not feel like eating breakfast; has an intense longing for acids in any form. The headache lessens as the day goes on; at night the headache is gone, and the patient does not feel like retiring. Commonly, urticaria, chilblains and oedema are present. Constipation is invariable, and dyspnoea, with hemic murmurs, are common. The patient is usually of an active mental type.

Treatment: Stop all acids and acid fruits, pickles, salad dressings and the like.

Milk should be administered, though such patients dislike milk. The bowels should be kept free. Dr. Ross administers 3 or 4 grains of extract of cascara for three or four nights, giving an occasional saline during the week, in the mornings. The specific medication is calcium lactate, as per the following prescription:

℞ Calcium Lact. ....	Gr. x
Elix. Sach. ....	m iv
Essence Zingiber. ....	m iii
Aqua ad. ....	oz ½

Ter in die ante cibum

If a tonic effect is desired, 3 or 4 minims of liq. strychninae may be added.

Dr. Ross had reported 49 cases in *The Lancet* some four years ago; and a recent investigator at St. Mary's Hospital, London, had reported a series of 42. Dr. Ross had further, after relieving a series of three cases, administered the citrates, with a return of symptoms—headache, chilblains, etc.; but after an exhibition of the calcium, cure was again effected.

The next case shown was one of migraine. The patient showed the classical symptoms of the disease. The pain commences in a small spot in the temporal region and extends over one-half the cranium. It occurs every two weeks. The paroxysm lasts from one to three days, until nausea and vomiting set in, when relief is obtained. The prodromal symptoms are, in many patients, usually referable to the eye, but in this patient a heavy, drowsy sensation is experienced. One case recalled was associated with a flushing of the face. The cause of the condition was unknown, various theories being offered. The most recent suggestion was that it is a sensory expression of an epilepsy. No cure had been found. Treatment should be directed to an improvement of the general health. Dr. Ross was trying lime, although he had found nothing abnormal in the blood. Nitro-glycerine had been found useful.

Incidentally, the patient had Sprengel's deformity, the etiology of which Dr. Ross adverted to. An X-ray showed nothing wrong with the shoulder joint. The patient also showed an arrested pulmonary tuberculosis.

The next case was one of Hodgkin's disease, the differential diagnosis of which the speaker reviewed. In this case he was not allowed to remove a portion of one of the glands to examine it (the simplest method), and so had to come to this conclusion by a process of exclusion. The other conditions to be kept in mind were chronic tubercular adenitis, lymphatic leukaemia and lymphosarcoma. The glands in tubercular adenitis would not have grown so large without having broken down; there would have been more peri-adenitis, and the glands would not be so discrete. There was no pain or tenderness. The blood picture and the non-enlargement of the spleen and liver excluded leukaemia, and the third disease was excluded by the long duration of the illness. An X-ray picture showed involvement of the mediastinal glands. Arsenic and X-ray treatment were affording relief.

The next case was one of tubercular adenitis, the patient, a boy, presenting all the characteristics of the old-fashioned scrofula. On this patient Dr. Ross exhibited the Moro and Von Pirquet's reactions, and discussed their reliability. The Von Pirquet consisted in applying to the skin crude tuberculin, and ensuring its passage into the lymphatic system by scraping the skin. In 24 hours you get the reaction—a fair amount of swelling and oedema. Occasionally there is a rise in temperature. The reaction was sometimes given in the non-tuberculous.

The Moro reaction was done by taking an equal quantity of old tuberculin and lanolin and rubbing them into the skin for ten minutes. This reaction was shown on a patient—tried with various strengths—fifty, twenty-five and twelve and a half, as recom-

mended by White and Graham, of Pittsburg. The severity of the reactions corresponded to the amount of tuberculin used.

A case of Stokes-Adams disease was then shown, and a graphic tracing of the same, the picture showing that the ventricle was beating 36 to the minute, and the auricle 72. Dr. Ross pointed out the cause—that the impulse which arises around the mouths of the great veins gets as far as the bundle of His, and here it is interrupted. These cases of heart-block were rather rare. The patient enjoyed fair health; but had been in the General Hospital some months before, suffering from a chronic itching, which had been decided upon as being purely subjective. No amount of reasoning could convince the patient that he was not suffering from the ravages of some insect. The heart block had been discovered incidentally. The insectophobia had disappeared.

The next case was one of pleurisy, with effusion. Spinal resonance disappeared at the seventh instead of the tenth vertebra. Some of the fluid was injected into a guinea-pig, producing a tuberculous nodule. The pig was exhibited. The Moro reaction in the patient was also positive.

A case of enlargement of the cervical glands in a case of lues was then shown. The interesting feature of the case was that they were extremely large—larger than the speaker had ever seen in a case of syphilis.

Dr. Ross then demonstrated his method of taking a blood culture. The patient's arm over the region of the front of the elbow was first sterilized by rubbing on pure lysol, followed by the application of pure alcohol; then the veins were constricted by a tourniquet above the elbow. The technique of sterilizing the syringe was shown, after which the blood was withdrawn and placed in the various media.

## Selected Articles.

### A SUGGESTION CONCERNING THE INCREASED LONGEVITY OF LIFE INSURANCE POLICYHOLDERS \*

BY BURNSIDE FOSTER, M.D., ST. PAUL, MINN.

Chief Medical Examiner of the New England Mutual Life Insurance Co. for Minnesota, and Editor of the St. Paul (Minn.), Medical Journal.

MODERN medicine has, above all, two chief aims, the prevention of disease and the recognition of its earliest signs in the individual. In both of these aims the business of life insurance has an immense interest, since the nearer we approach to their accomplishment the more we add to human longevity. I was much interested in reading the address of Prof. Irving Fisher, delivered before this body at its meeting in February last, on the Economic Aspect of Lengthening Human Life, and his plea for concerted action on the part of life insurance companies to lend their financial aid to the cause of preventive medicine, is one which meets with my hearty sympathy and approval. I do not know when or where the idea of enlisting the life insurance companies in the cause of preventive medicine originated, but it has been in my own mind for a good many years. In the course of an address delivered in 1902 before the Minnesota State Sanitary Association, and published in *American Medicine*, Vol. V, Nos. 11 and 12, (1903) I alluded to it in the following sentences which I should like to quote at this time, to prove that the idea is not a new one:

“The business which more than any other is directly concerned with the health of the people is the life insurance business, and when we consider the enormous amount of capital invested in this business and the enormous numbers of people, including both the insurers and insured, who are interested in it, it would seem that life insurance companies might form a powerful combination which would be capable of accomplishing a vast amount of good in this direction. Fire insurance companies have found the support of salvage corps as adjuncts to the regular municipal fire departments to be a very profitable investment. In an analogous but somewhat different way, I believe that life insurance com-

\*Address delivered at the regular bi-monthly meeting of the Association of Life Insurance Presidents, New York City, April 2, 1909.

panies would find it profitable to use their money and their influence in supporting the work of municipal boards of health, and also, perhaps, in pursuing and maintaining independent investigations of the many problems concerning sanitation which remain yet to be solved.

"The companies pay out annually millions of dollars for death losses which result from preventable diseases. Would it not be profitable from the business point of view alone to spend some of this money in endeavoring to prevent some of these diseases? Of course life insurance companies would be unable, in case they should pursue any such policy as the one suggested, to know just what lives they were saving, and they would, of course, assist in saving many lives that were not insured. Fire insurance salvage corps assume that all threatened property is insured, and endeavor to protect it all; I believe that the life insurance companies could well afford to do the same.

"If all the life insurance companies would combine and set aside each year a fund to be devoted to a co-operative investigation of some of the problems of preventive medicine, an immense amount of good would be accomplished at an expense which would be trifling to each company, and the direct return to the companies would be very large."

Preventive medicine becomes more nearly an exact science all the time, and while its possibilities are far from being realized, this is not because of its own inexactness or shortcomings, but because the people have not yet awakened to the fact that those diseases which cause the greatest number of deaths and the greatest amount of suffering are actually preventable, if money enough is spent to prevent them. The only way to enlist all the people actively in the crusade against preventable disease is to present the subject as an economic one, which it surely is, and one which appeals directly to their pocket-books. I am glad that life insurance companies are beginning to be interested in it from this point of view. Its study will prove profitable to them, and will afford a most valuable object lesson to the people.

I have another suggestion to make, which I was especially invited to make to you at this meeting by your General Council and Manager, and which is distinctly germane to the subject of preventive medicine as well as to the economic conduct of the business of life insurance.

As far as their policy-holders are concerned, life insurance companies have two chief objects in view: First, that every policy-holder shall be physically sound when his policy is issued, and second that he shall live as long and pay as many annual premiums as possible. These two conditions are also of great importance to the policy-holders themselves, because a low death rate means a smaller

cost of insurance, and also because every one wants to live as long as possible. All life insurance companies are careful, some more so than others, to see that their risks are carefully selected, and on the whole I believe that the medical examinations for life insurance in this country are rigorously and honestly made, and that the great majority of accepted applicants are sound at the time their policies are issued. This, of course, is as it should be, but so far as I know no effort is made by any life insurance company to keep in touch with the physical condition of its policy-holders after their policies are issued. Life insurance companies will, of course, admit that anything which would add five to ten or more years to the average longevity of their policy-holders, so that they would pay just that many more annual premiums, would be an immensely valuable stroke of business. I believe that this very thing is possible, although, of course, I would not go so far as to state anything definite as to the average increased longevity that might be brought about. There is probably not a physician who has not many times in his experience detected, while examining a patient for some other purpose, the early signs of some beginning organic disease, of which the patient had no suspicion. In such cases the early recognition of the first evidences of the disease has enabled the physician to so order the life of his patient as to prevent the further progress of the disease, if it is a curable one, or to retard its progress, and to enable the patient to live much longer than he would have lived had the disease not been detected until later.

Many persons die of kidney disease, of tuberculosis, of cancer, of diabetes, of heart disease, and of other diseases every year, and many millions of dollars are paid by the life insurance companies which have issued policies on the lives of these persons, who were sound when the policies were issued, and who might have lived much longer, and paid many more annual premiums if the diseases which caused their deaths had been recognized and properly treated in their earliest stages. To a medical audience it would not be necessary to go into details in regard to this statement, and perhaps to this audience it is not appropriate to do so, but I am sure that you will all understand that diabetes, for instance, begins very insidiously, and is often present for many months, perhaps years, without symptoms, and its presence is very apt to be first recognized as the result of an examination of the urine, made for some other purpose. You can also readily understand that if diabetes is detected in its very earliest stages, and the patient put upon appropriate treatment at once, he will live much longer than if it is allowed to go unsuspected, until treatment is of little avail.

So too, the early diagnosis of tuberculosis, of cancer, of heart disease means a better chance for recovery, and a longer life for the

individual. These are the very diseases which figure most largely in your mortality tables. My contention is that it is perfectly possible to recognize, in many cases, the early signs of these diseases before the individual suspects that any evidence of disease is present, and that life insurance companies would save large amounts of money which they now pay in death losses by inaugurating a plan of systematic re-examination of all their policy-holders at regular intervals, say every five years. This, of course, could not be made compulsory on all policy-holders, but I believe that the great majority, if the reasons for examination were explained to them, would be very glad to report to the medical examiner at a specified time, and submit to the necessary examination.

The expense to the companies would be trivial, and in certain cases where the policy-holder was insured in two or more companies the expense might be easily divided. Indeed, the companies might enter into an agreement for the exchange of information regarding all policy-holders as they now do in regard to rejected or postponed applications, and still further reduce the expense. The details of the plan which I should suggest would, of course, have to be carefully worked out by the companies, but I feel certain that by adopting some such plan as I have in mind, the statistics of life insurance companies would in a few years show a greatly reduced mortality with correspondingly increased profits to the business, and a lessening of the cost of life insurance. The whole tendency of modern medicine is toward the early recognition and the prevention of diseases, and the life insurance company which first makes a practical application of this principle to its business will not only bring about a revolution in the business of life insurance, but will also confer an immense and lasting benefit to the world.

It has been my experience, and other physicians have had the same experience, that there is a constantly increasing number of individuals who are adopting the custom of presenting themselves to physicians at stated intervals, not because they think they are sick, but for the purpose of being examined to ascertain if their organs are sound and their functions being properly performed. This would indicate that the importance of the early recognition of evidences of disease is being recognized. I have several times as the result of such an examination had the experience of detecting the beginning of some chronic disease, unsuspected by the individual, and I am positive that this discovery followed by appropriate advice has added some years to the life of that individual. Surely, the regular periodic examination of a large percentage of the immense group of individuals represented by the policy-holders of the life insurance companies of this country, would bring to

light many instances of incipient disease which appropriate treatment would either cure or check, and it is equally sure that the average longevity of this group of individuals would be increased. I am also convinced, that, if a carefully worded letter were sent to each policy-holder at stated intervals, say every three or five years, explaining the advantages to them of such an examination, and offering it to them without charge, as one of the benefits conferred by their policies, a very large majority of them would avail themselves of the privilege.

Life insurance, the most beneficent and philanthropic of all businesses, and the profession of medicine have for years worked together in the study of many problems having to do with human life. Aside from the humanitarian point of view the business of life insurance has an immense financial interest in the increase of human longevity; and in spending money to aid in the accomplishment of the aims of preventive medicine, the companies may legitimately charge the amounts thus expended to the regular expense accounts of their business. Medicine is expected to do much, and does much in the name of sentiment, charity and philanthropy. Life insurance companies cannot spend the money of their stockholders or their policy-holders for such purposes, but when sentiment and philanthropy also spell more premiums from policy-holders, and hence cheaper insurance, they not only may, but must invest in them. I look forward with confidence to the time when preventable diseases will be prevented, and when curable diseases will be recognized in the curable stage, and will be cured, and I believe the grandest triumphs of civilization will be the achievements which will result from a realization of the possibilities of preventive medicine. The coming of this time will also mark a new era in life insurance. As an additional suggestion I append a draft of a letter which, or some modification of which, would, I feel sure, induce a very large proportion of policy-holders to report for examination at stated intervals.

#### SUGGESTED LETTER TO POLICY-HOLDERS.

"My Dear Sir,—As a policy-holder in this company you are directly interested in the economic conduct of its business, since the amount of your dividends, and hence the cost of your insurance, depends upon the profits earned each year over and above the cost of carrying on the business. You are also, it is presumed, interested in your own individual longevity and would like to live as long as possible. We hope, therefore, that you will read this letter carefully, and that you will be willing to accede to the request contained in it. It is well known to physicians that very many of the diseases of which people ultimately die, have existed a long time before their symptoms have been noticed by the patient, and

that when the patient finally consults a physician, it is often too late to do all that might have been done if the disease had been detected earlier. Many diseases may be checked or cured in their early stages. Many individuals are beginning to realize this, and the custom of consulting a physician at stated intervals for the purpose of being examined to ascertain the presence or absence of the early signs of disease is growing to be a common one. We have decided to offer our policy-holders, as one of the benefits of their policy, an opportunity to receive such an examination at stated intervals without charge to them. You have now been a policy-holder in this company for . . . . . years, and we should be glad to know that you are in the same good physical condition at the present time as you were at the time your policy was issued; if on the other hand you have at the present time any evidence of the beginning of any disease it is for your interest, as well as for ours, that it should be detected, in order that you may put yourself in the way of being cured if possible. We should be very glad if you would present yourself to our examiner, Dr. . . . . . between the . . . . . and the . . . . . of this month for examination, taking the enclosed blank with you.

“There will be no expense attached to this examination, and, of course, all information in regard to it will be held as confidential between the examiner and the company. There is no obligation on your part to have this examination made, and it has, of course, no bearing on the status of your policy, but since the interests of all our policy-holders are affected by having as large a number of them periodically examined as possible, we hope that you will accede to our request.

Yours very truly,

It occurs to me that the directors of life insurance companies in considering, if they do consider, the suggestion I have made to-day, may fairly look at it from another point of view, besides that of adding to the longevity of their policy-holders. The problems concerning the prevention of disease, concerning the prolongation of life, and concerning public and private hygiene are being talked about, and thought about, and studied by the people, at the present time, more intelligently and more earnestly than ever before in the history of the world; this is undoubtedly the case. I believe it is also true, that events of the last few years have shaken to some extent the faith of the people in life insurance, as a business. Life insurance as an institution, as a protection to the family, stands firmly as ever, but unfavorable public sentiment has been aroused by the publicity which has been given to some of the business methods which have been practised by some of the life insurance companies. Would it not be a good thing for the business of life insurance, if the public were to learn that the

companies, besides offering a protection to the family after the death of the bread-winner, were earnestly and seriously engaged in a concerted effort to protect the bread-winner during his life? I believe it would, and I believe that if the business of life insurance, and the profession of medicine, were to join hands on the platform of preventive medicine, they would both earn the gratitude of humanity. The financial rewards to the life insurance companies would also be great; the people would share largely in the financial benefits, since the cost of their insurance would be lessened, and the medical profession while not profiting financially—indeed, preventive medicine is directly against the financial interests of the medical profession—would take pride in its share of the added benefits to mankind. When preventive medicine becomes actually preventive, a large number of diseases, notably the communicable diseases, will become practically extinct, just as the bubo plague and cholera are now practically extinct in most highly civilized communities. It will be necessary, however, in order to keep the sanitary defences of a nation properly manned to have at all times a large standing sanitary army of medical men who will be servants of the state rather than servants of the individual. This is the ideal future of the medical profession.

The possibilities of properly directed scientific effort in the control of disease in animals have been amply demonstrated by the United States Government in the work that has been done during the last twenty-five years by the department of agriculture in protecting hogs, cattle and domestic fowls from the many pests which formerly were so fatal to these animals, and the millions expended by the Government in this work have been returned many times in the form of increased profits to the farmers and stock raisers, and have added immensely to our national prosperity. The problems of the control of the diseases of mankind are not very different from the problems of the control of the diseases of beasts. Are not its citizens at least as great an asset to a nation as its hogs? The government undertook the matter of protecting the lives of its hogs and cattle because the people demanded it. When the people demand it, it will also undertake to protect the lives of its citizens. It is as simple a problem to drive typhoid fever out of the United States as it was to banish yellow fever from Havana and from Panama. The medical profession has for years been pleading for governmental aid in their efforts to prevent preventable disease. It has pleaded to deaf ears. Let the immense influence of the life insurance companies be brought to bear upon the government in this matter, and those ears will be deaf no longer. Whether, gentlemen, the directors of the companies represented in this Association see any merit in any definite suggestion I have made to you to-day, or not, is a small matter, compared with the immense

educational value to the people, of witnessing an active effort on the part of the great institutions which you represent, to prevent preventable disease and to add to human longevity.

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### SOME RELATIONS OF THE THYROID GLAND.

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BY S. P. BEEBE, M.D., NEW YORK.

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THE thyroid gland is now attracting more attention from the physiologist, the pathologist, and the clinician than it has at any other time in the history of medicine.

Its fundamental importance is gradually being realized, and it, together with the associated parathyroid gland, is coming to be recognized as of quite as much importance to the health and normal functioning of the organism as the liver, kidney or suprarenal gland. Fairly definite pathological conditions have been associated with the underactivity or the overactivity of the thyroid, but its relation to a series of metabolic disturbances which do not fall sharply into either hyperthyroidism or hypothyroidism is just being demonstrated. Nevertheless the fundamental physiological activity which it performs is yet undecided.

In hyperthyroidism we are confronted with a symptom-complex which has been explained in various ways. It may perhaps seem unnecessary to argue that the symptoms of this condition are due to overactivity of the thyroid function, but some investigators are not yet convinced that such is the case. I shall not attempt to outline all the evidence upon this point, but will merely call attention to the fact that the more recent evidence indicates the symptoms of the disease are the result of the direct action of the abnormally large amounts of thyroid proteid in the circulation. It is not denied that a disturbance of vasomotor control, perhaps of a local nature, may be a fundamental fact in permitting the absorption of the abnormal quantity of thyroid proteid, but when the condition is once established I believe that we are dealing with an autointoxication rather than an intrinsic neurosis. The constitutional disturbance evidenced by the loss in weight, the larger excretion of nitrogen, the disturbed nitrogenous metabolism evidenced by increased creatin, diminished creatinin and low test nitrogen, the characteristic blood findings of a leukopenia with relative lymphocytosis, the profound muscular weakness, the tachycardia which is due to a direct action on the heart muscle, are findings which are reproduced in large part by the artificial administration of thyroid substance, and point to thyroid poisoning and not to a functional neurotic disturbance.

A wide variety of precipitating causes may usher in the onset of symptoms. Physical overwork accompanied by severe mental strain and responsibility, a sudden fright in an otherwise normal individual, the continued excitement of certain religious observances, a severe emotional shock, or the continued depressing influence of an unsuitable environment, are found to be preceding events in a large number of cases. In such instances we might reason that a vasomotor instability has been the primary factor in permitting abnormal thyroid absorption. In a small percentage of cases there has been thyroid enlargement without symptoms for some time. In one such patient a severe fright was followed within eight hours by symptoms of acute thyroid poisoning. In this case, which is typical of a considerable group, we cannot suppose that the secreting cells of the thyroid gland have actually produced during the interval a larger quantity of the iodized thyroid globulin, the absorption of which is responsible for the symptoms. It seems probable that in such cases the primary event is a vasomotor dilatation, and with the increased blood-supply to the thyroid gland the unusual absorption has been permitted. Why with such an origin the condition passes into a chronic disturbance is not explained. Some cases which have originated in such manner may continue for a long period of years, while others are only a temporary storm, and without treatment the organism rapidly regains a normal equilibrium after the severe nervous shock has passed.

In another group of cases there is fairly good evidence that the disturbance of an infectious disease, notably tonsillitis and typhoid, has been the primary event in the abnormal thyroid physiology. It has been customary to explain these cases by supposing that the thyroid is called into unusual activity in order to combat the toxemia in the disease, and that from this beginning the vicious circle is continued. Some observers maintain that any toxemic disturbance in the body calls forth unusual activity on the part of the thyroid, and they find evidences of such activity in the increased size and the histologically over-active condition of such glands. The examination of over 200 human thyroids obtained from a variety of toxemic and infectious diseases leads me to believe that there is no basis for such a conclusion. The glands have been found to be quite as often atrophic and inactive. There is no doubt that hyperthyroidism often follows tonsillitis, but I believe this may follow as a result of a vasomotor disturbance rather than to suppose that the altruistic action of the thyroid has continued to an ungovernable condition.

Some experimental evidence has been published to show that the administration of thyroid proteid to normal mice permits them to withstand fatal doses of a comparatively simple poison,

acetonitrile. I have repeated these experiments on a large series of mice, but have been unable to demonstrate the invariable protection claimed by Hunt and Seidell. I am convinced, however, that the physiological effect of large doses of thyroid may be anti-toxic under some circumstances. A remarkable improvement in nitrogenous metabolism which follows thyroid administration in some cases of metabolic toxemia is accompanied generally by a corresponding decrease of toxic symptoms, and it seems probable that the action of the thyroid has actually decreased the amount of circulating toxic material.

Regardless of the etiology, the patient is mostly concerned with the possibility of relief. The therapeutic measures which have been applied to the various thyroid disturbances are even more numerous than the theories which have been put forward to explain them. In my opinion such a variety of measures of treatment need not argue that the thyroid is not the direct factor in the production of symptoms. In any disease where a large percentage of cases recover without any treatment whatever there will always be found a great variety of therapeutic measures. The surgeon, when sufficiently expert in technique and judgment, undoubtedly cures a large percentage of cases. The X-rays properly applied are undoubtedly effective in many cases. The rest cure has many adherents, and justly so. The application of psychotherapy to these diseases has produced brilliant results when applied by the right man, in the right way, to the right group of cases. We must recognize that practically all the methods of treatment have some psychic effect. This is properly so, and if the physician has no confidence in his therapeutic measures he can scarcely expect it of the patient. And in addition to all these there is the physician who relies upon medicines, and occasionally even upon some various forms of specific treatment which have been advised within recent years. I believe that these various methods of treatment all have their place, and that when confronted with any given case one should try to determine which form of treatment or which combination is the best one to apply. In reaching such a conclusion a considerable number of factors must be taken into consideration. Among these it goes without saying that the particular type of disease is very important, and the particular qualifications and clinical judgment of the physician who is to carry out the treatment must be considered. If an operation is proposed, one must not only consider the type of the disease, but also the skill, judgment, and experience of the surgeon who is to perform the operation. If it is possible I believe it to be wise to treat these cases without operating, for although there is a large factor of safety in the thyroid gland, and a very large percentage of the total gland tissue may be re-

moved surgically without causing immediate harm to the patient, I believe we have not seen enough of the final late results in these cases to justify surgical attack if a simpler means of treatment will give good results and leave the thyroid gland intact. The first person operated on in this country for Graves's disease had a relapse thirteen years later, which was readily cured by serum.

The disease is most common in young persons in whom the thyroid gland has its maximum physiological activity, and the fact that a large part of the gland may at an early age be removed with impunity does not prove that an effect which appears later in life may not be unfavorable. Some experiments which we have recently made indicate that in a young animal the thyroid readily absorbs iodine and gives an increased functional activity thereby. In an old animal such a result does not follow. The iodine is either not absorbed at all or only to a very limited extent. We cannot conclude from such experiments that the older animal does not need the thyroid function, for we know from other experiments that it does need it. If a large part of the animal's gland has been removed in early life, it seems possible that in the later years, when the gland is naturally much less active and efficient than in the younger period, some of the difficulties consequent upon old age might be increased. We cannot reason that because in a normal animal the removal of three-fourths of the total kidney tissue works no immediate harm, and may even cause a very marked increase in the total output of urine, such an operation is to be recommended. The ideal result to be attained is the relief of the distressing symptoms of the disease and the restoration of the patient to normal condition with as little physiological injury as it is possible to make. If this can be done by simple medical means, thereby leaving the gland intact, I believe that the surgical treatment is undesirable. Moreover, the medical means of treatment—and in this term I include the serum treatment—can be carried out by any intelligent physician, while the surgical treatment ought to be restricted to those few men who combine the requisite skill with keen judgment in the selection of suitable cases.

I do not hold a brief for the serum treatment. It is probably known that this treatment has now been applied to a large number (about 450) of cases, and as a whole the results are very good; but I may say that although my interest in this form of treatment is keen, I have within the last six months recommended surgery, X-rays, rest treatment, and psychotherapy in cases which were unsuitable for serum treatment. Nevertheless the statistics which we have obtained up to date from cases treated by many different observers indicate that the serum has a very marked value, and that it gives the physician an additional opportunity to prevent some of the disastrous results of surgery.—*Therapeutic Gazette.*

# The Canadian Journal of Medicine and Surgery

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43 BLOOR STREET EAST, TORONTO.

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## Editorials.

### THE EVILS OF HEREDITY CALL FOR GREAT CARE IN EFFECTING MARRIAGE

At a session of the International Council of Women, held in the Convocation Hall of the University of Toronto, June 28th, 1909, Professor R. Ramsay Wright, Vice-President of the University of Toronto, spoke of "Heredity and Environment." The lecture was accompanied by stereopticon views. The lecturer described the

structure of protoplasmic cells, the cell nucleus, and the structure of nuclei. He showed that the chromatin of the sex-nuclei was the bearer of the hereditary qualities, and, although derived in equal amounts from both parents, contained different proportionate representation inherited from the grandparents and great grandparents. Not only physical, but mental, moral and intellectual qualities were transmitted through heredity from generation to generation. Instances were given to show the effects of a bad heredity, and remedies were suggested.

“Statistics,” he said, “show that the birth rate among drunkards, the insane and the criminal is higher than it is among normal people. Predisposition to tuberculosis, insanity, criminal tendencies were also transmitted by heredity.”

In reference to drunkenness, the lecturer said that total prohibition, though a shorter way of getting rid of the evils of liquor, did not destroy the craving for it in the drunkard. Some naturalists thought that it would be better to allow nature to take her course and thus weed out those who had an abnormal craving for drink, leaving only sober members of the race as survivors. The lecturer, however, said that prohibition, if successful in preventing alcoholism, would eliminate the recognized deteriorating effect of alcoholic excess on the germ plasm and show beneficial results in a population adopting it.

Marriage regulation affecting criminals, habitual drunkards, those having mental troubles, and men and women affected with transmissible chronic diseases was the only sure method of putting a stop to the conveyance through marriage of these disturbances, which have created so much trouble in the family and society. If the regulation of marriage could not be obtained, parties considering marriage should ascertain whether or not there were traces of trouble in the ancestors of either party which could be transferred to coming generations. Owing to the full exposition given to the subject of heredity, only a brief reference was made to the effects of environment. A scheme which had been advanced by Professor Forel, the celebrated Swiss alienist, was that of taking several Japanese children, and adopting them as babes in the homes of European families, and *vice versa*, and by this means ascertaining whether the greater force was heredity or environment. The lecturer recommended the science of “Eugemics,” or good methods

of breeding, as applied to mankind, as a subject eminently suited for the consideration of the Women's Congress.

The lecture includes themes so vast, that it could with advantage be expanded into a series of lectures. We hope that the learned Professor may take up this subject again, feeling confident, as we do, that it would meet with a cordial reception from the Toronto physicians.

It occurs to us, from observation of cases, that children born of sound parents may reproduce the defective mental, moral or physical characteristics of a preceding generation on the father's or mother's side. One notices that a child bears a physical resemblance to a grandsire, a grand uncle, a grandmother, or grand aunt, instead of favoring either parent. Mental or moral characteristics may also follow the same route. In Canada, owing to immigration, people of different races marry, in ignorance of family history on either side, and the children born of such unions, though the parents are sound, may present defective mental, moral or physical traits, derived from ancestors of a preceding generation. This is a difficulty the occurrence of which should be prevented, if possible. Parents should interest themselves deeply in the matrimonial concerns of their children. Wealth and influence may not be theirs with which to dower their children, but, by exercising care in selection and making suitable enquiries, they may prevent the evils traceable to a misalliance.

J. J. C.

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## CONFLICTING VIEWS OF THE ETIOLOGY OF TUBERCULOSIS

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THE medical profession, not to mention the public, must feel a trifle mystified by the claims of contending pathologists respecting the etiology of tuberculosis. That the alimentary route, with the natural inculcation of the gentle cow, is the *fons et origo mali*, is supported by the experimental results of Calmette, Guérin, Breton, Vansteenbergh, and Gryscy. These experimenters show that tubercle bacilli, and also pigments like those of china ink, introduced into the stomach of the guinea pig will find their way to the lungs, without producing any visible alteration of the intestinal mucous membrane.

Sir W. Whitla, (*vide B. M. J.*, July, 1908) announces that he

has performed experiments in which the tubercle bacilli and the pigments were mixed, and the results which he obtained confirmed those of the previously mentioned observers. He maintains that, while we are hardly justified in assuming that phthisis never occurs from the inhalation of dried sputum in dust, or from inhaling the spray ejected in the act of coughing, it appears to be conclusively proven that, as forcibly put by Ravenel, the alimentary tract is a frequent portal of entry for the tubercle bacillus, which is able to pass through the intact mucous membrane of the bowel, without producing any local lesion at the point of entrance; that this event is especially frequent in children, and that the milk of tuberculous cows is the common source of infection in these cases. Sir W. Whitla asserts that at no distant day the contention of Calmette that, *in the immense majority of cases pulmonary tuberculosis is not contracted by inhalation*, but that, as taught by von Béhring, the bacilli of tuberculosis enter the system through the alimentary canal, will be generally accepted.

This is rather absolute, and would seem to demonstrate that the etiology of tuberculosis by the respiratory route is a fallacy.

However, it is admitted that in China, where the consumption of the milk of bovines is practically *nil*, tuberculosis is everywhere prevalent among the natives. In reference to this last point, Bernheim (International Congress of Tuberculosis, 1908) says that the frequency of human tuberculosis in countries where the use of milk and meat is very limited, and the slight mortality of children during the process of lactation, demonstrates that their intestines play a *rôle* altogether secondary, although appreciable, as a channel of entrance of tuberculosis. Moreover, the necessity of introducing large doses of tuberculous products into the alimentary canals of animals, in order to produce experimental tuberculosis, and the numerous failures in obtaining it, do not argue in favor of the enterogenic doctrine of human tuberculosis. Bernheim also says that the great facility of realizing in man, as well as in animals, an experimental tuberculosis by inhalation of dried sputa argues in favor of the view that the respiratory path is a common channel of infection.

J. Comby (International Congress of Tuberculosis, 1908) attacked the milk and meat theory of the etiology of tuberculosis, and sustained the doctrine that the bacilli tuberculosis enter by the respiratory passage. He said: "Our clinical investigations have

shown that tuberculous children are found only in families in which there are tuberculous members, regardless of the kind of milk consumed. On the other hand, we constantly find at autopsies tuberculosis of the peri-bronchial glands, which, therefore, represent the aerial port of entry of the bacillus of Koch. Among 1,432 autopsies on children from the hospitals of Paris, during the course of fourteen years, we found 529 tuberculous subjects, or about 37 per cent. Among 216 infants from 0 to 3 months, 4 tuberculous, or less than 2 per cent.; of 1,008 from 0 to 2 years, 252 tuberculous, or about 25 per cent. After the second year the proportion of tuberculous cadavers attains 45, 50, 60 and 65 per cent. All this is fully explained by human contagion. Prophylaxis should occupy itself with phthisical human beings and not with cows."

This last assertion is more epigrammatic than true, for all admit that a certain percentage of cases of tuberculosis can be traced to infection through the alimentary route. This last point was well brought out by Sir W. Thompson, who, in his reply to the Hon. Sydney Fisher, at the public health meeting of the International Council of Women, Toronto, 1909, put the etiology of tuberculosis in this way: "Perhaps not as much tuberculosis as had been thought arose from diseased milk, but the Hon. Mr. Fisher admitted that there were quite a number of cases from that cause. It would be hard to fix the percentage, but Mr. Fisher, of course, had access to statistics, and probably could be quite sure of the correctness of his figures. Sir William Thompson, however, thought that the present opinion was that more tuberculosis was contracted from milk than was thought a few years ago. It was the opinion of medical men that the disease contracted in that way would remain latent in the system for some time. The tuberculin test was a very valuable one, and the whole world would follow Canada's example, if it prevented the use of milk from animals which had reacted to that test. On the other side of the Atlantic, they would be satisfied to discard all milk from cows, which showed any taint of tuberculosis of the udder."

There is reason, therefore, for blaming the gentle cow for a percentage of tuberculosis; how great or how small that percentage may be the pathologists do not say. The greatest weight of evidence favors the opinion, that the vast majority of cases of tuberculosis arise from infection of the respiratory passages, through air-borne dried sputum.

## EDITORIAL NOTES.

**Injections of Alcohol into the Nerves in Neuralgia.**—O. Kiliam, in *The Medical Record*, June 5, 1909, praises the good effects of injections of alcohol in neuralgia, especially trifacial neuralgia. He injects from 1 c.c. to 4 c.c. of 80 per cent. alcohol into the affected nerves. Since September, 1906, he has treated 190 cases, with 5 failures; the other 185 patients were all relieved of pain for some time. The number of injections necessary to produce a curative effect varied from two to ten, according to the number of branches of the nerve affected, the severity of the pain, and the anatomical peculiarities of the skull of the patient; on the average three injections sufficed. Narcotics are not required. When dexterously done, the result in many instances is instantaneous. Pain that has persisted in a violent form for years disappears instantly. Other cases required a greater number of injections of alcohol, the treatment taking about two weeks' time. The cure, however, is not a permanent one, and, in Kiliam's opinion, there is no permanent cure for trifacial neuralgia, not even excepting gasserectomy. Recurrence varied from three months to two years. In case of recurrence, one or two injections of alcohol into the affected nerve will allay the neuralgic pain in most cases.

**Treatment of Puerperal Eclampsia.**—A case of puerperal eclampsia in a primipara will test the therapeutic resources of a veteran, and, sometimes, in spite of well-directed treatment, the poisoned heart fails and the patient passes away. In this note the full treatment of puerperal eclampsia will not be given, but, rather, some indications of the line of treatment most likely to be successful, together with cautions against the use of certain drugs which have been found in practice to do more harm than good. Most obstetricians resort to chloroform, in order to control the fits, but chloroform acts like the eclamptic poison itself, in depressing the heart. The same objection applies to chloral. Many physicians claim to have found the tincture of *veratrum viride* of value in controlling the fits, and they give this drug in doses sufficient to cause nausea, or even vomiting. *Veratrum viride* powerfully depresses the circulation, small doses greatly reducing the force of the pulse, large ones rendering the pulse weak, rapid, or almost

indistinguishable. The continued administration of *veratrum viride* to control fits in a case of puerperal eclampsia would be most perilous. Strychnine, which itself tends to cause convulsions, is objectionable as a heart stimulant in eclampsia. At the Rotunda Hospital, Dublin, the treatment in puerperal eclampsia is: (i.) Delivery when possible. (ii.) To avoid further metabolism. (iii.) To aid excretion. (iv.) Symptomatic. *Accouchement forcé* is not practised there; the obstetrician waits until the os uteri is sufficiently open and the head fixed enough to apply the forceps, or until the os uteri is sufficiently open to deliver as a breech presentation. To avoid the metabolism of digestion, no food is given by mouth or rectum. Morphine decreases metabolism, and hence temporarily and partially puts the metabolic sources of eclampsia out of action. Morphine decreases cerebral irritability and controls the fits. It does not depress the heart, and probably has no effect on the secretion of the kidneys. An eclamptic patient should be put to bed and a half a grain of morphia sulphate, with one-hundredth of a grain of atropine sulphate, injected subcutaneously. If further fits occur, another quarter of a grain of morphine, with atropine 1-200, is given in two hours' time. This dose is repeated every two hours, if necessary, up to two grains in the twenty-four hours. If the patient is conscious and she can swallow, she should get one and a half drachms of compound jalap powder, or two ounces of castor oil, or three ounces of black draught. If unconscious or intractable, wait for a quarter of an hour, to allow her to come well under the influence of the morphine, and then pass a soft siphon tube into the stomach; the tube is connected with a douche. The patient's stomach should then be washed out with warm water. Before withdrawing the tube pour in two ounces of castor oil, with three drops of croton oil. The patient is then turned on her side. A long, soft rubber tube, lubricated with glycerine, and filled with warm water, is then pushed through the anus, and as high up the rectum as possible. The bowel is washed out until the return is clear. Hot poultices of linseed meal are applied every two hours to the loins to relieve the congestion of the kidneys. If profoundly unconscious, infuse one pint of the saline solution under one breast. If unconsciousness continues after eight hours, infuse a pint of the same under the other breast. The catheter should be passed, urine withdrawn and measured. The patient should be covered

with blankets. No food is given until the patient has recovered from the fits. Then milk and hot water is given. For heart failure inject ten to twenty drops of whiskey, and digitalin gr. 1-100. It will thus be seen from this account that a successful treatment of puerperal eclampsia consists mainly in morphine and a thorough emptying of both upper and lower bowels.

**Diet as a Prophylactic and Therapeutic Agent.**—In the June number of *The Interstate Medical Journal*, Dr. H. W. Wiley, Washington, D.C., publishes a paper containing some interesting data on diet as a prophylactic and therapeutic agent. He objects to the excessive mastication of food, that it would tend to satisfy the sense of hunger with a less quantity of food than is needed in normal conditions. While favoring a considerable degree of comminution of food, he is opposed to prolonged mastication. If mastication is continued until the food is reduced to its molecular condition, the food would be almost instantaneously digested; but, if the absorbent system remains in its present condition, it would be impossible for that food to enter the circulation in an instantaneous manner. Much of it would, in the natural motion of the intestinal organs, soon pass beyond the region of absorption and entirely escape entering into the nutritive processes. Dr. Wiley favors a mixed diet of protein, fat and carbohydrates. He instances beriberi, a disease occurring among the poorer classes in Japan, and believed to be due to the exclusive use of rice as food. He mentions scurvy, which is believed to be caused by a lack of fresh vegetables in the dietary. In reference to milk, he draws a distinction between the use of milk by healthy people and by the sick. Healthy people may use milk which has been dosed with boric acid, formol, benzoate of sodium, or other preservative; but the case is different with the invalid. The ingestion of even minute quantities of these protectives or of old milk, not yet sour, may, and probably does, induce positive injury. Even pasteurized milk may be undesirable, especially in the case of infants, as has been illustrated by the reports of many physicians. A healthy adult can drink pasteurized milk with impunity, provided the milk was good when pasteurized and did not need pasteurizing; but the same good milk pasteurized and used by a sick person might be open to serious objections. Dr. Wiley does not go so far as to regard sour milk as the elixir vitae; but, in some cases of low nutrition, has seen excellent results ob-

tained from sour milk or kumyss. He mentions that at the present time fresh, pasteurized, unchemicalized apple juice can be got in the United States. Grape juice, without sulphur, can also be obtained. These fruit juices, given in an unsophisticated form, are useful in the dieting of invalids and convalescents. The concluding remarks in his paper call for the careful consideration of the teaching faculties of the medical colleges. Dr. Wiley says: "In the progress of medical education, the near future, in my opinion, will see the professorship of dietetics in a medical school advanced to the same rank as that of medicine, and I am even going farther than this, and say that the practice of medicine in the future will be largely a practice of dietetics."

J. J. C.

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#### PERSONALS.

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DR. J. H. ELLIOTT, of 722 Spadina Avenue, Toronto, will be at Port Carling, Ont., from July 14th, returning to Toronto September 17th.

DR. T. S. WEBSTER sailed early in July to attend the British Medical Association, and visit Budapesth and other noted centres for medical education, and will return about Sept. 10th.

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## Obituary

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#### DEATH OF DR. RATCLIFFE

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Dr. Wm. G. Ratcliffe, only son of Rev. Dr. J. H. Ratcliffe, pastor of First Presbyterian Church of St. Catharines, and one of St. Catharines' most prominent physicians, is dead, after a few days' illness from acute typhoid fever. He was about 35 years of age, and was married only a short time ago to a daughter of W. C. McCall.

Dr. Ratcliffe was a very clever practitioner, and a man apparently of exceedingly robust health up to a day or two ago, when he was stricken down.

## *Proceedings of Societies.*

### THE CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS

The annual meeting of this Association was held in Hamilton on May 19th and 20th, in the recital hall of the Conservatory of Music.

The morning session of the first day was devoted to routine business, reception of reports, appointment of committees. In the afternoon the Association was formally welcomed by Mayor McLaren, who in the course of his remarks, pointed out that Hamilton was one of the leaders in Canada in taking preventive measures as regards consumption. He hoped that the day would come when the doctors' practices, as far as consumption patients were concerned, would be very much smaller. It was a preventible disease, and there was no reason why, in Canada, where there was plenty of room, there should be the congested conditions which caused so much of it. He was sorry to see a tendency in Hamilton towards making the streets narrower. The people would regret this if it was allowed to continue. Fortunately, this city was not troubled with the tenement trouble. He hoped the Association would succeed in disseminating information which would make the people more public-spirited in regard to the treatment of tuberculosis.

The afternoon address was given by Dr. Wm. Charles White, of Pittsburg, Pa., on "Municipal Supremacy in Tuberculosis," outlining what had been done by an Association in that city.

Consumption, he said, was the disease of poverty and the disease of wealth. It was responsible for one-eighth of the deaths in civilized countries and for one-half of the sickness. In its terminal stages it brought about results that were the saddest possible. He desired to leave the sentimental side of the sickness aside and to get down to the subject of the prevention of tuberculosis as a business proposition. Municipalities, that was the men directing them, should sit down, find out how much of the disease existed among them, and then correlate all the forces possible to combat it. It was only by united effort that they could overcome the dreaded complaint. Was it not worth while to fight this disease from a business and economic standpoint? The Illinois Government computed that it spent \$1,200,000 on the education of children who never reached a wage-earning age. Of course the disease

could never be entirely eradicated, but by the adoption of general preventive measures, they could reduce it to a minimum in the same way as they had typhoid fever and smallpox. It was the business of those carrying on an anti-consumption campaign to make it clear to everybody that an enormous toll in lives and money was being exacted by the disease, which could be done away with. There were three groups that should be interested. They were the state or the province, the municipality and charitable institutions. These three should combine and decide upon a basic proposition, settle upon a central office, for preference in a city hall, and appoint the medical health officer to the charge of the work.

In Great Britain and Germany they had found that one very important factor was to remove the cause of infection, whether it was in the incipient or advanced stage, by caring for poor patients in special institutions. Properly attended to, patients were not dangerous to those around them. All they had to do was to observe the rules which consumption associations laid down for observation. When the patient had been cured, he should have some place in which he could work back to his normal labor capacity. He thought a farm colony was the best arrangement, where a patient could work fifteen minutes at first, and gradually increase the length of time as his strength returned. Those farm colonies were essential economic necessities, as too often the patient assumed normal work and again fell a prey to the complaint.

The associations should see about educating the municipalities into saturating the people with knowledge of the necessity of preventive measures. Of course he was not doing much good addressing a meeting of adults, as he was doing, because they were past the formative stage in impressions, but they could see to it that the children were educated to a due appreciation of the responsibility devolving upon them in this connection. In Pittsburg the nurse who visited the schools incorporated in the lessons advice about consumption, and this work was now being carried out systematically. In Pittsburg the churches have loyally co-operated with the Anti-Consumption Association, and have carried on educational work from the pulpit. Some thought they would be opposed by the medical fraternity. If they had the people with them they need not fear the criticism of anybody. He had not been in a hospital in Canada where proper precautions were taken to prevent infection. The authorities said they did not take consumption cases. But didn't they? They had unexamined maternity and operation cases that were capable of spreading it. In Pittsburg, through the instrumentality of the Anti-Consumption Association, burnable sputum cups were provided for three hospitals. This Association also secured the nurses and gave them an exten-

sion and practical course in the handling of consumptive cases, something they did not get in the ordinary routine of hospital lectures. In this way, information gradually got into the homes. Then there were the orphan and lunatic asylums, which were rife with this disease, to which doctors, nurses and visitors were exposed. Absolutely no precautions were taken to check the disease in these institutions. The patients in each of these places should be segregated.

Dr. White next dealt with the measures taken in Pittsburg for the prevention of consumption among children. He said they were going to build an open-air schoolroom for the use of children affected. In this connection it was hoped that enough money could be secured to enable them to provide children with something to eat at 11 o'clock in the morning, and thereby do away with much of the weak resistance powers so many children suffered from when they had left home, as they often did, without breakfast. His Association also did a mail educational work, sending out little bulletins of advice every month to parents and others.

Their business was to get the public ready, and then the government would do anything they asked of it. An example worth following was that now being set by Hamilton. The Provincial Government could not be held responsible when the municipalities and cities did so little. They should get hold of as many people as they could, and get them interested, and those people that invested money would find that they got ample return for their investments.

The evening address was given by Prof. J. George Adami, of Montreal, before an audience which completely filled the recital hall. His subject was "Economics and Success in the Tuberculosis Crusade." In his study of the problem, Dr. Adami has been forced to the conclusion that notwithstanding the excellent results of treatment of patients in sanatoriums, the method is too expensive to be practical, that is on a scale large enough to be a marked factor in the lessening of tuberculosis. Each municipality must care for its own tuberculous patients, with the assistance of the Government, and of the philanthropic public. Prevention, too, is a municipal problem, and must be faced by the local sanitary authority when sufficient powers are given by the Province. The work being done in Montreal by the local League is detailed. The address is so interesting that we have reported the principal part of it elsewhere in this issue. For this we extend our thanks to the *Hamilton Herald*.

At the close of this session the physicians in attendance were the guests of the Hamilton Medical Society at the Hamilton Club, where, after supper had been served, two hours were pleasantly and profitably spent in a discussion on tubercular and other

modern methods of treatment. Dr. J. Heumer Mullen, the President of the Medical Society, occupied the chair, and the discussion was opened by Dr. W. C. White and Prof. Adami.

The second day's session was devoted to a discussion of "The Responsibility of the People in Tuberculosis," opened by Dr. R. J. Lockhart, Hespeler, and continued by Dr. J. D. Lafferty, of Calgary, Dr. R. M. Simpson, of Winnipeg, and Judge John A. Barron, Stratford. Mrs. Duncan, of London, gave a brief account of her work amongst the factory girls of that city.

In the afternoon the Association were the guests of the Hamilton Health Association at the Mountain Sanatorium, where they were received by Mrs. P. D. Crerar. Those who had no previous opportunity to visit this well-equipped and well-managed Sanatorium were full of expressions of delight and appreciation of the splendid work being done there. The example being set by Hamilton in its crusade against tuberculosis cannot but be an inspiration and example to other cities.

The following officers were elected:

President—Prof. J. G. Adami, Montreal.

Vice-Presidents—Hon. Senator Edwards, Ottawa; H. H. Miller, M.P., Hanover; William Southam, Hamilton; James Manuel, Ottawa; J. G. Rutherford, Ottawa; Sir James A. Grant, Ottawa; George H. Perley, Ottawa; Hon. Senator Beique, Montreal; Dr. L. Laberge, Montreal; J. D. Boland, Montreal; J. A. Hutchison, Montreal; Dr. Gordon Bell, Winnipeg; Hon. W. R. Motherwell, Regina; Hon. W. H. Findlay, Edmonton, Alta.

Treasurer—George Burn, Ottawa.

Secretary—Rev. Dr. Moore, Ottawa.

Associate Secretary and Organizer—Dr. G. D. Porter, Toronto.

Executive Committee—Right Rev. Bishop of Hamilton; Sir Hugh Graham, Hon. F. A. Lawrence, J. W. Daniels, M.P., Dr. J. D. Lafferty, C. J. Fagan, M.D., Dr. R. W. Bruce-Smith, Dr. J. H. Elliott, Dr. R. M. Simpson, Rev. T. H. Boyd.

The Association will meet next year in Montreal.

J. H. E.

## THE INTERNATIONAL MEDICAL CONGRESS

The sixteenth International Medical Congress will be held at Budapest this year from August 29th to September 4th. The Congress is under the patronage of the King of Hungary (the Emperor of Austria), who will be represented by his Imperial and Royal Highness, the Archduke Joseph.

### SECTIONS.

The work of the Congress will be distributed among twenty-one sections, as follows:

1. Anatomy, embryology.
2. Physiology.
3. General and experimental pathology.
4. Microbiology (bacteriology), pathological anatomy.
5. Therapeutics (pharmacology, physical therapeutics, balneology).
6. Internal medicine.
7. Surgery.
8. Obstetrics and gynecology.
9. Ophthalmology.
10. Diseases of children.
11. Diseases of the nervous system.
12. Psychiatry.
13. Dermatology and venereal diseases.
14. Diseases of the urinary tract.
15. Rhinology and laryngology.
16. Otology.
17. Stomatology.
18. Hygiene and immunity.
19. Forensic medicine.
20. Military and naval sanitary services.
21. Maritime medicine and tropical diseases.

### GENERAL MEETINGS.

There will be six general meetings—"not contradictory," as is stated in the official circular, which, we presume, means that discussion will not be allowed.

The following addresses, among others, will be delivered at these meetings:

Professor Baccelli, of Rome: The administration of heroic remedies by the veins.

Dr. E. F. Bashford, of London: On cancer.

Professor R. Kutner, of Berlin (by request of the Prussian Central Committee of Medical Education): Medical education.

Dr. A. Laveran, of Paris: Tropical pathology.

Professor J. Loeb, of Berkeley (University of California): Artificial parthenogenesis and its bearing upon the physiology and pathology of the cell.

An address on representations of disease in the pre-Columbian era will be delivered on one of the days during which the Congress is in session by Dr. E. Hollander, of Berlin.

The general secretary of the Congress is Mr. Em. de Gross. Applications relative to the Congress should be addressed up to August 24th to the Secretariate, VIII Esterhazy utca, 7, Budapest;

after that date they should be addressed to the general offices of the Congress.

EXCURSIONS.

Excursions to various places of interest have been arranged. Among the places to be visited are Kolozsvár, the ancient capital of Transylvania; Marosujvár, with its salt mines, lighted by electricity; the High Tatra, described as the "El Dorado of tourists"; the famous ice-cavern of Dobsina; Lake Bala, often called the Hungarian Sea; the Lower Danube; Constantinople, Athens, Corfu and Trieste; Bosnia-Herzegovina, Dalmatia, and the Hungarian littoral. Applications relative to lodgings and excursions should be addressed to the Central Travelling-Ticket Office, IV. Vigado ter. 1, Budapest, Hungary (Telegraphic address: Menetjegyiroda-Budapest).

OTHER MEETINGS.

The International Medical Press Association will hold its general meeting at Budapest before the Congress.

The Permanent Bureau of the International Bureau for the Protection of Infancy will meet at Budapest on August 28th.

Physicians who are contemplating a trip to Budapest to attend the Congress will find it to their advantage to join the American party that is being organized by Dr. Charles Wood Fassett, of St. Joseph, Missouri. A 41-day trip for \$395, including hotel bills and all expenses, has been arranged, with privilege of returning later if desired.

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CANADIAN MEDICAL ASSOCIATION MEETING, WINNIPEG,  
MAN., 1909

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The Canadian Pacific Railway Company issues, per W. Maughan, City Passenger and Ticket Agent, Toronto, the following circular, giving particulars of transportation arrangements which have been put in effect for the above meeting:

Tickets to be issued from Saturday, August 14th, 1909, to Saturday, August 21st, 1909.

Properly validated certificates will be honored at Winnipeg ticket offices for return tickets up to and including Saturday, September 25th, 1909.

Tickets will be issued on certificate plan arrangement, i.e., delegates purchase one-way first-class tickets, for which single first-class fare will be collected, plus 25 cents, and issuing agent will give with ticket a standard form of railway certificate, which upon being properly executed at Winnipeg, will be honored at Canadian

Pacific Railway ticket office for ticket back to original starting point, as follows:

If fifty or more delegates are in attendance from points east of Port Arthur in Canada (Eastern Canadian Passenger Association territory), holding standard form of railway certificate, tickets will be issued for return journey free (see Lake Route exceptions).

If forty-nine or less are in attendance on conditions outlined in next preceding paragraph, tickets will be issued for the return trip at the difference between the regular one-way and regular return fare, applicable from original starting point to Winnipeg.

First-class all-rail one-way rate, Toronto to Winnipeg is...\$26.05  
First-class lake and rail one-way rate, Toronto to Winnipeg,

is ..... 31.95

Where delegates desire on going trip to travel by rail route and return by lake route. Canadian Pacific steamships, Fort William to Owen Sound, they will be sold tickets from starting point to Winnipeg at the lowest one-way first-class rail fare, plus 25 cents, and when they have their certificates exchanged at Winnipeg for return trip, by lake route, they will be charged \$8.50 additional.

Where delegates travel by lake route, Canadian Pacific steamships, Owen Sound to Fort William, and desire to return by rail route, they will be sold tickets from starting point to Winnipeg at the lowest one-way first-class lake fare, plus 25 cents, and when they have their certificates exchanged at Winnipeg for return trip by rail route, they will be charged \$3.50 additional.

Where delegates desire to travel by lake route, both going and returning, Canadian Pacific steamships between Owen Sound and Fort William, they will be sold tickets from starting point to Winnipeg at the lowest one-way first-class lake fare, plus 25 cents, and when they have their certificates exchanged at Winnipeg for tickets returning trip by lake route, they will be charged \$12.00 additional.

The above additional amounts to be collected at Winnipeg when certificates are exchanged for tickets for return trip, and provided fifty or more persons are in attendance from E.C.P. Assn. territory, Port Arthur and East, in Canada. If less than fifty in attendance, tickets will be sold for the return trip at the difference between the fare paid on the going trip and regular fare applicable by route travelled.

Canadian Pacific "Winnipeg Flyer" runs on following schedule: Leave Toronto 10.10 p.m. daily. Arrive Winnipeg 11.55 a.m. second day.

This train is made up of Canadian Pacific highest standard equipment, consisting of baggage car, colonist car, tourist sleeping

cars, first-class sleeping cars and dining car, and runs through solid Toronto to Winnipeg.

Canadian Pacific Upper Lake service will be as follows:

	S.S. "KEEWATIN"	S.S. "MANITOBA"	S.S. "ASSINIBOIA"
Leave Toronto . . . . .	Tues. 1.00 p.m.	Thurs. 1.00 p.m.	Sat. 1.00 p.m.
Arrive Owen Sound . . .	" 4.50 p.m.	" 4.50 p.m.	" 4.50 p.m.
Leave Owen Sound . . . .	" 5.00 p.m.	" 5.00 p.m.	" 5.00 p.m.
Arrive Fort William . .	Thurs. 7.30 a.m.	Sat. 12.00 noon.	Mon. 7.30 a.m.
Leave Fort William . . . .	" 8.20 a.m.	" 8.50 p.m.	" 8.20 a.m.
Arrive Winnipeg . . . . .	" 9.20 p.m.	Sun. 9.45 a.m.	" 9.20 p.m.

The new steamships "Keewatin" and "Assiniboia" are models of luxury and the finest product of modern ship-building and skill. Time-table above speaks for their speed and seaworthiness. All first-class tickets include meals and berth on Canadian Pacific Upper Lake steamships. A slight additional charge is made for the exclusive use of the cabins de luxe.

In addition to above, tickets will be issued via all regular routes, via Detroit, Chicago, Sault Ste. Marie, and St. Paul to Winnipeg.

The rate for first-class sleeping car berth, Toronto to Winnipeg, is \$8.00, and for berth in tourist car \$4.00.

Delegates from points in Canada, east of Port Arthur, will have the privilege of arranging side trips as follows:

To points in Manitoba, Alberta and Saskatchewan, from Winnipeg, at lowest one-way first-class fare for round trip; dates of sale, August 25th to September 24th, with final limit of September 25th, 1909.

To points in British Columbia (except Pacific Coast points, for which Alaska-Yukon-Pacific Exposition rates will apply), and Kootenay, from Winnipeg at lowest one-way first-class fare for the round trip; dates of sale August 24th to September 4th, inclusive; final return limit September 25th, 1909.

Side trip tickets, as above, will be issued to bona-fide delegates, holding certificates of attendance.

Application for sleeping car or upper lake steamship accommodation should be made to W. Maughan, City Passenger and Ticket Agent, Toronto.

# The Physician's Library.

## BOOK REVIEWS

*The Practical Medicine Series.* Comprising Ten Volumes of the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of GUSTAVUS P. HEAD, M.D., Professor of Laryngology and Rhinology, Chicago Post-graduate Medical School. Volume 11. Edited by JOHN B. MURPHY, A.M., M.D., LL.D., Professor of Surgery in the Northwestern University; Attending Surgeon and Chief of Staff of Mercy Hospital, Wesley Hospital, St. Joseph's Hospital and Columbus Hospital; Consulting Surgeon to the Cook County Hospital and Alexian Brothers Hospital, Chicago. Illinois. Series 1909. Chicago: The Year Book Publishing Company, 40 Dearborn Street.

This is a useful resumé of current surgical literature. We suppose it is but human nature that "Murphy" should be so frequently quoted, when the volume is prepared under his supervision. A hasty review of the contents shows that more is being written on the subject of bone and joint lesions, suture of peripheral nerves, and some on the removal of emboli before gangrene occurs. The book is well worth having. F. N. G. S.

*The Theory and Practice of Infant Feeding.* By HENRY DWIGHT CHAPIN, A.M., M.D., Professor of Diseases of Children, New York Post-graduate School and Hospital, etc. Third Edition Revised.

The past seven years have been marked by no greater advance in medical literature than that devoted to Pediatrics, and specially to that part, of such vast value to humanity at large, infantile feeding. It was in 1902 that Dr. Chapin presented his first edition of this work, which was at once received most favorably by the profession. In 1904 a second edition was published. February of this year the third edition was presented. The work is good. No man who undertakes to prescribe for a bottle-fed baby intelligently can possibly do so without a thorough acquaintance with the precepts and practice laid down by such a work as this. Dr. Chapin says most truly: "Instead of making the superficial chemical composition of mother's milk the starting point, and striving to make an artificial human milk, as has been the

case, it is more and more coming to be seen that the infant is subject to the general laws of animal life, and often these can be conformed to in a number of apparently different ways. Methods formerly condemned as unscientific although they gave good results, are now seen to be in strict accordance with natural biological laws, whilst some procedures formerly taught as scientific have been shown to be the reverse." He shows throughout the whole work an effort to treat infant feeding from the standpoint of biology, not empirically, nor by decimal fractions, such as many teachers and authors during the past have been striving to preach and teach as the only true and proper method of feeding a baby "according to Hoyle." The work is greater than mere baby feeding, the first ten chapters being devoted to a clear and well written dissertation, Growth and Cell Division, Processes of Digestion, Classification of Foods, Metabolism and Excretion, etc. Then Part II. gives an excellent resumé on Cow's Milk, Market Milk, Proprietary Infant Foods, Preservation of Milk, Bacteriology, etc. Part III., Practical Feeding, Diet at later Age, Constipation, Diarrhea, etc. Part IV., forty pages of scientific work concerning the growth and development of infants.

We think the work a desideratum for any general practitioner; a good reference handbook. Not diffuse, still nothing scamped or slurred, and, therefore, can heartily recommend it to our readers. The print and illustrations are worthy of the well known house, William Wood & Company.

A. B.

*The Problem of Age, Growth and Death.* A Study of Cyto-morphosis, based on lectures at the Lowell Institute, March, 1907. By, CHARLES S. MINOT, LL.D. (Yale, Toronto) D.Sc. (Oxford); JAMES STILLMAN, Professor of Comparative Anatomy in the Harvard Medical School, President of the Boston Society of Natural History. Illustrated. G. P. Putnam's Sons (New York and London), The Knickerbocker Press. 1908. For sale at Tyrrell's book shop, \$3.00.

It is the physician's problem to make as long a space as possible between the periods of growth and death in humanity; so this is primarily a physician's book, though written in language so simple as to be intelligible to the non-professional reader. It does not add to the physician's armamentarium in his fight with disease, but increases his knowledge of the processes of decay and death.

"The conclusion of the whole matter," is that "natural death is the consequence of cellular differentiation." This conclusion is open to many comments, and surely does not express all the law of senescence, since those creatures with least cell differ-

entiation are shortest lived. The great riddle of life and death is still unsolved.

The book is interesting and illuminating, and brings its readers to the front in this department of science. J. S. H.

*Araminta.* By J. C. SNATHI. Publishers, William Briggs Toronto.

As the season is now here when one is on the lookout for books to amuse and pass on to others at the summer resorts, "Araminta" should not be forgotten. Amusing, with here and there a quaint touch, as if the author was falling a bit in love with his heroine himself and then stopped and turned the light of laughter upon his own silliness in creating anything lovable, his artist hero is well drawn and so are the characters of the older people in this bright story. W. A. Y.

*Experimental Pharmacology.* A Laboratory Guide for the Study of the Physiological Action of Drugs. By CHARLES WILSON GREENE, Ph.D., Professor of Physiology and Pharmacology, University of Michigan. Third edition; revised; with 37 new illustrations. Philadelphia: P. Blakestor's Son & Co., 1012 Walnut Street. 1909.

This, the third edition, has been revised, and some additional experiments have been added, with more illustrations. It will be found very useful to the student of experiments, as a guide, but is not sufficiently explanatory, except to one who would be acquainted with the author's *modus operandi*. S. J. N.

#### *Heredity and Disease.*

This book, published by Longmans, Green & Company, contains a report of a discussion by the Royal Society of Medicine on "The Influence of Heredity on Disease, with Special Reference to Tuberculosis, Cancer and Diseases of the Nervous System." Sir William Church, Sir William Gowers, Dr. Arthur Latham and Dr. E. F. Bashford open the discussions. Other eminent authorities take part in the debates.

Dr. Mudge, of the London Hospital, comes out as a warm advocate of mendelism in the study of heredity, while Karl Pearson strongly opposes and as strongly advocates the biometric principle. Many allusions are made to the subject of mendelism throughout the debate. Dr. Gorsage pointed out that when a normal person marries an abnormal the progeny are not a compromise between the two parents, but that some of the children are normal, and others abnormal.

With reference to the subject-matter proper, it is conceded

that inheritance may play a part in the production of disease, but the disease *per se* is not inherited; though one of the speakers, Mercier, holds that whenever disease is displayed in successive generations in accordance with mendelism we cannot doubt that the disease is truly inherited. He holds the comfortable doctrine that variations are difficult to fix, easy to breed out, and give us little anxiety about the future of the family in which they occur.

Great emphasis is placed by many of the speakers on the importance in the study of heredity of securing a proper pedigree. The family history is most important. In many instances the inquiry is too perfunctorily made. Pearson holds that a good pedigree is almost a work of art. He holds that if but one man in ten would once in his life construct two perfect pedigrees, we should in the course of a generation have all the material needed to answer the questions of the inheritance of deformity and of the constitutional tendency to special diseases.

Bashford holds that cancer is probably always acquired. Butlin reports that in the study of patients with cancer he observed that in previous generations instead of being scattered irregularly on the mother's or father's side, the cases were all on one side, or all on the other.

*A Manual of Infectious Diseases.* By E. W. GOODALL, M.D. Lond.; Medical Superintendent of the Eastern Hospital of the Metropolitan Asylums Board; formerly Medical Registrar to Guy's Hospital; and J. W. WASHBURN, C.M.G., M.D., Lond.; F.R.C.P., late Physician to Guy's Hospital and Lecturer in the Medical School; Physician to the London Fever Hospital, and Consulting Physician to His Majesty's Forces in South Africa. Second edition, revised and enlarged by E. W. Goodall. London: H. K. Lewis, 136 Gower St., W.C. 1908.

This is the second edition of a book that has been before the profession since 1896, and has in all that time held its place. It still holds its former high position, and must be looked upon as being arranged particularly with a view to its value as a practical instructor.

Originally it was written for the use of students, and, while it is of the greatest use in supplementing bedside teaching, it is of equal value or perhaps even greater in the hands of the medical practitioner, who has perhaps forgotten the finer distinctions of diagnosis in the eruptive fevers.

The present volume is changed both in the matter that it contains and the arrangement of the volume, and it has many additions, with new chapters on glanders, cerebro-spinal fever and plague. There are also many new illustrations. The aim of the book is to give to the reader, besides the clinical history, an idea

of the ordinary appearances which are referred to in the text. The photographs are very interesting, and as they are not colored have the advantage of showing the reader exactly what he may expect, and leaving it to him to put in the coloring. The photographs, taken from the microscopical specimens of the bacilli, are very delicate and accurate.

Of such value is this book that it would be difficult for any man who has this at hand to make a mistake with regard to the diagnosis of infectious diseases.

A. J. J.

*Physiological and Medical Observations Among the Indians of Southwestern United States and Northern Mexico.* By ALEX HRDLICKA. Washington: Government Printing Office, 1908.

From 1898 to 1905, in the course of six expeditions, the writer visited nearly all the Indian tribes in Southwestern United States and in Northwestern Mexico. These expeditions were made primarily in the interest of physical anthropology, but, as a physician, the writer had exceptional opportunities for acquiring information of a physiological and medical nature. The results of his observations are presented in this book, which is known as Bulletin 34, of the Bureau of American Ethnology, Smithsonian Institution.

The author describes in detail the general habits of life, character and social condition of these Indians. These include clothing, dwellings, occupations, food, alcoholic drinks and so on.

Under "Medical Observations" he gives the Indian conception of disease, its prevention and treatment, their folk medicine and their medicine-men being included in the description. He also describes the diseases most prevalent among Indians in various parts of the United States.

The Bulletin contains many diagrams and excellent photographs, showing various types of Indians, and giving pictures of their dwellings. It is a very interesting and readable account of Indian life.

A. E.

*Lectures. On the Use of Massage and Early Movements in Recent Fractures and other Common Surgical Injuries, Sprains and Their Consequences. Rigidity of the Spine, and the Management of Stiff Joints Generally.* By SIR WILLIAM H. BENNETT, K.C. V.O., F.R.C.S.; Consulting Surgeon to St. George's Hospital and to the Hospital of St. John and Elizabeth; Senior Surgeon to the Seamen's Hospital, Greenwich, etc. Fourth edition, with 23 Illustrations. Longmans, Green & Co., 39 Paternoster Row, London, New York, Bombay, and Calcutta. 1909. All rights reserved.

Just Lucas-Championiere and Sir William H. Bennett have been hammering away on massage and early movements in the

treatment of fractures, Lane becomes more and more an advocate of the open method of treatment, while the rank and file go on in the same old haphazard way with "Set the fracture—which they rarely succeed in doing—and put on a splint." Out of the chaos surely good will come, and perhaps the next generation will not find it necessary to condemn their victims to a stiff joint or a shortened limb.

Those who have not read Bennett's work should secure it and digest it thoroughly, for it should help materially to a better understanding of what is expected from the treatment.

F. N. G. S.

*Miss Minerva and William Green Hill.* By FRANCES BOYD CALHOUN. Illustrated. Publishers: The Musson Book Company, Limited, Toronto.

William Green Hill is not only the latest but the most amusing little kid cute 'un in the story book world of to-day. He is a winning, irresistible child of the south, and his Aunt Minerva is quite worth the place allotted to her in this fascinating little story. Every woman who reads about him will want to kiss William Green Hill, and every man will want to hoist him to his shoulder and shout, "Boys, he's the real thing." W. A. Y.

*Intestinal Auto-Intoxication.* By A. COMBE, M.D., Professor of Clinical Pediatrics at the University of Lausanne (Switzerland); Chief of Clinic for Children's Diseases; President of the Swiss Pediatric Society. Together with an Appendix on the Lactic Ferments, with particular reference to their application in Intestinal Therapeutics, by Albert Fournier, formerly Demonstrator at Sorbonne, Paris. Only authorized English adaptation by William Gaynor States, M.D., Clinical Assistant Rectal and Intestinal Diseases, New York Polyclinic; Member of the American Medical Association; Member of State and County Medical Society of New York; West Side Clinical Society, etc. With eighteen figures in the text, four of which are colored. New York: Rebman Company, 1123 Broadway. Cloth, \$4.00.

The work under review is written by Dr. Combe, who is the Chief of Clinic for Children's Diseases in Lausanne, Switzerland. The author, however, does not by any means restrict himself to diseases in children, but his monograph on Gastro-Intestinal Auto-Intoxication is also written with reference to conditions which obtain in the adult.

The various toxic substances which are found in the intestinal tract are very fully described, indicating the genesis of both living organisms and the chemical substances which comprise the group.

An interesting section is devoted to a consideration of the resistance instituted in the body for the purpose of combating the

effect of various toxins, both in the intestinal canal itself and in the various organs, such as the liver, kidney, etc., which have to do with the destruction and elimination of intestinal poisons.

The pathology of the class of diseases under consideration is fully discussed, including suggestive reference to experimental work in connection therewith.

There is an elaborate description of the symptomatology and diagnosis, whilst perhaps the most important and interesting part of the work consists in the portion of it devoted to treatment. This portion is written in a thoroughly scientific spirit, and is based upon a thorough knowledge and consideration of the etiology and pathology of these diseases.

When one states that the book is written in a lucid and logical fashion along the lines which have been indicated above, it will become obvious that it forms a very important contribution to the literature of Intestinal Auto-Intoxication, and we would recommend it therefore to practitioners in general as well worthy of study. It will certainly be found most valuable to the general practitioner who wishes to have an intelligent knowledge of the conditions with which he has to deal in this common class of diseases.

A. P.

*Vaccine and Serum Therapy*, including also a Study of Infections, Theories of Immunity, Opsonins and the Opsonic Index. By EDWIN HENRY SCHORER, B.S., M.D., Assistant Professor of Parasitology and Hygiene, University of Missouri; formerly Assistant, Rockefeller Institute for Medical Research, New York City. Illustrated. St. Louis: C. V. Mosby Co. 1909.

This work, of 124 pages, deals with Infections, Immunity, Opsonins and the Opsonic Index in health and disease, and with Vaccine Serum and Therapy. The object of the work is to give a concise and accurate statement of our present knowledge of the various vaccines and immune sera. Wright's work is reviewed, and a great deal of his technique given in the collection of serum, preparation of various opsonic index, etc. This book will be found valuable to those interested in this coming branch of our work.

M. J. W.

*Studies in Clinical Anatomy*. Including the Heart Vessels and Lungs. By DR. RAYMOND TRIPIER, Professor in the Faculty of Medicine at Lyons. Published in Paris by Steinheil.

The author calls attention to the fact that clinical anatomy, or the anatomy of disease, has received attention from many noted physicians in his own country, among whom are named Laennec, Andral, Louis, Vouillaud, Cruveilhier, in presenting his work upon the heart and lungs, but draws upon the work done by noted

observers the world over. Among those best known to English readers are Osler, Paget, Prudden and Goodhart. To the ordinary medical reader, it is surprising what an amount of interesting and valuable material may be found in the consideration of the diseased tissues within so limited an area as that discussed by this book. The illustrations, while not as numerous as one might desire, set forth with reasonable clearness the pathological conditions involved. For those who can make ready reference to the various chapters on these conditions, the book, as setting forth the most modern views, will prove highly valuable.

B. E. M.

*Aids to Forensic Medicine and Toxicology.* By WILLIAM MURRELL, M.D., F.R.C.P., Physician to and Lecturer on Clinical Medicine in the Westminster Hospital, Joint Lecturer on Medicine in the Westminster Hospital Medical School, late Examiner in the Universities of Edinburgh, Glasgow and Aberdeen, and to the Royal College of Physicians, London. Seventh Edition. Sixteenth thousand. London: Baillière, Tindall & Cox, 8 Henrietta St., Covent Garden. 1909.

Dr. Murrell's small book has just appeared in its seventh edition. It is divided into two parts; part one dealing with Forensic Medicine, and part two with Toxicology. The book covers in all nearly 125 pages and has been carefully revised. A good deal of new material has been added to Part I., and those of the profession interested in Forensic Medicine and Toxicology will find the work worthy of careful perusal.

W. A. Y.

*The Sword of the Lord.* By JOSEPH HOCKING, Author of "A Strong Man's Vow," "A Flame of Fire," etc. With frontispiece in colors by MAX COWPER. Publishers, Cassell & Co., Ltd., Toronto.

"The Sword of the Lord" is a stirring story of Luther and his times, written with the author's well-known power.

Brian Hamilton is sent to Germany by Henry VIII. to bring a lady of noble birth to England, where her presence is required for political reasons. The King has chosen Hamilton for the task partly because the latter is reputed to be a woman-hater, and Henry does not desire a messenger likely to fall in love with the lady. But even so absolute a monarch as Henry VIII. is not always able to stay the tide of love.

Brian's mission is surrounded by almost overwhelming difficulties, for, at the time of his arrival, Germany is in a state of ferment, owing to the growth of the Reformation. He meets Luther and Erasmus, and has many thrilling experiences in the execution of his important mission.

Messrs. Bailliere, Tindall & Cox, of 8 Henrietta Street, Covent Garden, London, announce that they have taken over the publication of all the books by Sir William Whittla, including "Materia Medica," "Practice of Medicine," and his well-known "Dictionary of Treatment," a new edition of which will be shortly issued. They are also now the publishers of Green's "Pathology and Morbid Anatomy," a tenth edition of which is in circulation.

These changes are the result of the retirement from business after more than 40 years' work, of Mr. William Renshaw, the head of the old established firm of Henry Renshaw, which has now ceased to exist.

Messrs. Bailliere, Tindall & Cox have also the following new works and new editions in active preparation: Dieulafoy's "Text Book of Medicine," translated by V. F. Collins, M.D., Lond.; "Manual of Massage," by M. A. Ellison, L.O.S., 3rd edition; "Practical Microscopy," by F. Shillington Seales, F.R.M.S., 2nd edition; "Aids to Analysis of Food and Drugs," by C. G. Moor, F.I.C., and W. Partridge, F.I.C., 2nd edition; "Sanatorium Treatment of Tuberculosis," by Rufenacht Walters, M.D.; "Surgical Anaesthesia," by Bellamy Gardner, M.R.C.S.; "Aids to Mathematics of Hygiene," by R. Bruce Ferguson, M.D., 3rd edition; "Chemical Notes and Equations," by G. H. Gemmell, F.I.C., 2nd edition; "Gynaecological Therapeutics," by S. J. Aarons, M.D.; "Incidence of Sex and Age on Disease," by J. Grant Andrew, F.F.P.S.; "Menstruation and its Disorders," by Arthur F. Giles, M.D., 2nd edition. Also, reprint of the second edition of "Minor Maladies," by Leonard Williams, M.D.

Mr. H. K. Lewis has purchased the remainder of the stock of the New Sydenham Society's publications, comprising the collection of volumes on medicine and surgery, the "Pathological Atlas," the "Dictionary of Medical Terms," and the "Atlas of Clinical Medicine, Surgery and Pathology," issued by the Society during the years 1859-1907. Many of the works were of a pioneer character when issued by the Society, and have since acquired a classic and historic importance. The number of copies of each book has been of necessity limited on account of the heavy expense of warehousing a larger stock, and of many of the volumes only a small number remained over.