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THE UNIFORMITY OF INFLAMMATORY DISEASE.

BY

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The variation of one case of a disease from another is the factor contributing most to the interest of the practice of medicine, and to the difficulty of its study. Since these variations are so great, one often fails to recognize the common ground that underlies all inflammatory reactions, and thereby greatly increases the difficulty of understanding each case. The object of these remarks, is to insist upon the accurate knowledge of the process of inflammation as a basis upon which can be built the superstructure of all various inflammatory conditions, and to insist, further, upon the impossibility of understanding or classifying these numerous and apparently different problems, without such knowledge.

Every case of Inflammation is a problem into which enter two factors—the causative agent, and the animal body; the former, an ever-varying force acts upon the latter, an ever-varying quantity, in a way which is, luckily, comparatively invariable. Therefore, of three entities in the problem, two are constantly varying, the third fixed; there are thus some important points to be noted:—

- (1) The result of such a problem cannot be guessed.
- (2) It is scarcely possible that any two such problems can ever have the same answer; hence is the variation of cases.
- (3) Where so much is variable, it is necessary to thoroughly understand the non-variable part,—that is *the process*.

The process of inflammation consists of a series of stages, which are always present, which we may designate a b c d etc.; the tissues are educated to respond in only one way, but the relations a to b, to c, to d, with respect to degree and time may vary greatly, and any one, or any combination of two or more, may over-shadow the others so that its formula will read somewhat as follows:—a b c C C C C C d e f g H H H i j k, etc., and evidently this inflammation would be named, C H Another individual with the same toxin and the same process, by virtue

of his individuality, might make his case read:—A. A. B B c d e f g, etc., and this would obviously be called A B. Is there any ground for calling A B and C H different diseases? None whatever. The name given is that particular one suggested by the most prominent feature of the case.

In early days the picturesque, if slightly personal, method of naming men was from their individual characteristics; two brothers might resemble one the other, in a hundred characteristics, yet the one might be named from his large nose, the other from his red hair, and their names would fail to suggest their relationship.

To give a concrete example, it may be said that we speak of *fibrinous*, *catarrhal*, *fibroid*, *cheesy* and *purulent* pneumonia, laying stress upon the differences and failing to insist upon the resemblances of one to the other. We speak of syphilitic gummata and tubercles, as if they were two widely different forms of disease instead of two perfectly parallel processes. We had thought at one time that the existence of the giant cell in tuberculosis was characteristic of that disease. Since giant cells exist in syphilis and in chronic inflammation of a simple character, are we to suppose that Nature has deprived us of a useful aid in the diagnosis of tuberculosis? On the contrary, she has rather indicated the very close parallelism which exists between these three.

Before attempting, then, to understand or teach the pathology of tuberculosis and syphilis as separate diseases, it is absolutely essential that we remember that these are separate examples of the same process, that the features of one are reproduced in the other, that both, in short, are inflammations of a chronic type. One may go further, by making comparison between an acute abscess and a caseated tubercle, for he will find that the old formula of inflammation with its sequences holds in both; in the acute abscess it will be a b c d, etc., and all may be complete in two days, whereas in the tubercle it will be a a b b b b b b c c c d d d d, etc., and the process may require two months. Why the former is rapid and the latter slow may depend upon many circumstances, but the most easily grasped idea, is that the toxin in the former may be of strength A 10, and in the latter M 1.

A workable idea of toxin-power is the following: There are different degrees of toxin or irritant: First there are those which kill the cell as soon as they touch it, which "strike it dead"—formula A 50; second, those which do not kill at once, but send the cell into "a decline," which we describe as the sequence of events, roughly indicated one after the other by the conditions of cloudy swelling, granular swelling (or granular degeneration), disintegration, and final death; this second-grade of toxin may be designated M 1; thirdly, the weakest toxins,—formula S. 5, have apparently no power to injure the cell, but rather

irritate it to activity and overgrowth; this activity leads to the "reproduction of the cells of the part," which newly formed cells, being aggressive and active, are doubtless a great source of strength to the tissue; the homely example that occurs to me, is that of the small dog, the toxin that irritates the large dog, the tissue, until the latter irritated to activity, bestirs himself and kills its tormentor.

In explanation of the second of these degrees of toxin-strength, it may be pointed out that the sequence of events may occur rapidly or rules, which properly applied, underlie all inflammatory reaction, acute inflammation of the cell, the point at which an inflammation becomes chronic being arbitrary.

What are, then, the cut-and-dried facts which one must have grasped as a basis of all inflammatory reaction? There are certain fundamental rules, which properly applied, underly all inflammatory reaction, acute or chronic, and a practical, though incomplete rule of thumb, is here stated.

The irritant.—We refer to an irritative agent of the second class, that is, one not strong enough to "strike dead" the tissues, nor so weak as not to damage them. It matters not if the irritant be physical, chemical or bacterial.

The tissues.—Consider every organ as possessing two parts; (a) its parenchyma, the essential cellular structure, it may be a liver cell, a muscle cell, a mucosal cell, or a lymphocyte; and (b) its connective tissue filling the subsidiary rôle, the capsule, the stroma, etc. The parenchyma is more highly organized, fulfils the higher functions, is, in fact, the aristocracy of the tissue; the connective tissue, lower in function, more mechanical in its purposes, is the "common people." Observe that a toxin, sufficient to injure the highly organized "aristocratic" cell may produce no perceptible effect upon the "coarser grained" connective tissue fibre. These two kinds of tissue are everywhere side by side, and the irritant necessarily reaches both; it is essential, then, in the study of any case, to ask: What is the effect of the irritant upon (a) the parenchyma; (b) the connective tissue?

The Process.—(1) The cell (think of a concrete example, such as a kidney-tubule cell or a muscle fibre) becomes swollen, cloudy, irregular and indistinct of outline; then its cytoplasm becomes granular, it may develop fat droplets, and gradual disintegration occurs; instead of running the whole gamut, it may at any stage, if the irritant permit, begin to recover and finally return to the normal. (2) For an example of connective tissue, take, instead of the stroma of an organ, a piece of lax subcutaneous tissue, with its fibres, its blood vessels, considering it as an aggregation rather than as individual elements. The vessels dilate, congestion occurs, serum exudes, diapedesis of leucocytes goes

on, the individual cells may proliferate, and our tissue becomes sodden and infiltrated by inflammatory cells, that is, by leucocytes and the new-born cells that have sprung from the "cells of the part." If the toxin is weak, the congestion, diapedesis, etc., may be slight and the reproduction of "cells of the part" correspondingly greater. May I digress to point out the aptitude of the ancient jingle, "rubor, calor, tumor dolor?" The congestion gives the "rubor;" the increased heat production of the congestion, and possibly the lessened heat radiation, by slowing of the circulation, combine to produce the "calor;" the exuded serum, the intruding leucocytes, and the cells new-born from the original "cells of the part" together require increased space, and constitute the "tumor," and the stretched nerves are responsible for the "dolor." Any degree of this process may and does exist in the stroma of an organ as accurately as it occurs in the subcutaneous tissue.

To arrive at the condition of any inflamed organ, it is necessary to observe to what extent the damage to the parenchyma has gone, and what degree of interstitial reaction has accompanied it. The most acute irritants are prone to destroy both; the moderate irritants will probably affect the less hardy parenchyma to a greater degree, and the weakest irritants exerting their influence during long periods, while tending to destroy some cells may irritate others to reproduction, and thus preserve a continuity of parenchyma at the same time that they are causing a gradual overgrowth of the interstitial substance. Let us take a definite example, acute enteritis. The mucosal cells will be found to be in a stage of reaction, anywhere in the series, from cloudy swelling to a state bordering upon death; the connective tissue will undergo the various stages of congestion, exudation, diapedesis; during the congestion, glandular activity and exuding serum together, constitute the fluid which drains from the part, and observing this to be the most strongly marked characteristic, the condition is called *catarrhal* enteritis. Should diapedesis be so great that the leucocytes render the secretion turbid, it is called *purulent*; should the sodden, infiltrated connective tissue break down at a late stage and form an abscess, it is designated, a *phlegmonous* enteritis; should death of the mucosal cells be associated with death of the submucosal cells, there is loss of tissue, and it is called "*ulcerative*"; should mucosal cells die, remain in situ, and the exuded serum and leucocytes form lymph which also remains upon the surface, we have a mass of necrotic tissue, lymph, etc., which, being the most striking feature, earns for the condition the name of *membranous*. Thus, according to the stage, or according to the preponderance of any one feature, the enteritis may be designated *catarrhal*, *purulent*, *phlegmonous*, *ulcerative*, or *membranous*; yet it is essentially the same unvarying process.

The active, progressive inflammation, such as the above, which works rapidly and produces definite results, is a clear-cut fact; but the inflammations that act by the effect of weak irritants, (it may even be, by failure of the cell to rid itself of its products of metabolism) which require months or years to accomplish, are so gradual, that they are often scarcely discernible. We call them degenerations, and to many the term degeneration implies a hazy, indefinite condition, hardly health and hardly disease, but whatever it be, not an inflammation. Yet it is an inflammation. We must recognize that the "degenerations" of the heart are inflammations, brought about by weak irritants acting through long courses of time. The histological picture of such a degeneration is the same, in every particular, as the picture of an inflammation. Does disease bring the cell by two different routes, to the same end? It is hardly to be supposed.

Summarized, the facts are these:—

1. Inflammation is a definite series of events, occurring in a definite order; the events may require widely different periods of time, and one event may be more prominent than another, but the uniformity of the process can be depended upon.

2. The ability to classify and recognize any given case of inflammation depends upon a clear knowledge of this sequence of events, which is found described in the introductory part of every text-book, and, in default of a better way, must be slavishly learned therefrom.

3. There is scarcely a limit to the weakness of an irritant, or to the length of time through which an irritant may act; however, slow the process, the various events in the sequence are present, in their definite order, and the process, though called by the indefinite term "degeneration," is, in kind, an inflammation.

MULTIPLE PRIMARY TUMOURS IN THE STOMACH AND MAMMA, COMBINED WITH TUBERCULOSIS OF THE PLEURA AND PERIBRONCHIAL GLANDS, WITH SOME REMARKS ON THE QUESTION OF MULTIPLE PRIMARY GROWTHS IN GENERAL AND THE ASSOCIATION OF TUBERCULOSIS AND CARCINOMA.

BY

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Adenocarcinoma of the Pyloric end of the Stomach ; Fibromyoma of the Stomach ; Carcinoma Simplex of the Right Breast ; Active Tuberculosis of the Left Pleura and Peribronchial Glands.

The subject of multiple primary growths occurring in more or less widely separated parts of the body is one that has attracted some little attention of late, and apart from the intrinsic interest of the condition has an important bearing on the theory of tumour formation.

It is, of course, within the knowledge of everyone that multiplicity is a common feature in the case of certain growths, fibromata and lipomata, in fact so common as to be the rule rather than the exception. This is particularly true with regard to tumours in such organs as the skin and uterus. Instances of the simultaneous occurrence of two primary growths of different type, as for example a fibroma of the uterus with a carcinoma elsewhere, are perhaps less frequent, but are still sufficiently common not to excite remark. The association of two malignant growths of different type and separate origin, or of three or more primary tumours is decidedly rare. The fact that such cases are not more frequently reported is perhaps to be explained on the view that pathologists have not assumed a sufficiently sceptical frame of mind, so that where multiple growths are discovered in various parts of the body, they have jumped at the conclusion that lay to hand that these were simply expressions of metastasis. This, of course, does not necessarily follow, and careful study would no doubt in some cases at least shew that a mistake had been made. The literature on the subject is by no means large, but a few suggestive papers have appeared at various times, notably one recently from the J. H. R. Molson Laboratory of Pathology at McGill University (P. G. Woolley. The Boston Med. and Surg. Journ., Jan. 1, 1903, p. 1). Now that special attention has been directed to this important subject, we may expect interest in it to grow. Woolley has fairly fully analyzed the cases hitherto recorded and has described a few additional ones from the pathological department of

the Royal Victoria Hospital. To these I am enabled to add in the present communication.

In 685 autopsies of which I have notes, multiple primary growths occurred in 18 instances. These were divided as follows:

1, 2 and 3.—Bilateral Cystadenoma Malignum of the Ovaries, 3 cases. (Two of these reported by Dr. Woolley, *loc. cit.*).

4.—Bilateral Carcinoma of the Suprarenals, 1 case. (reported by Dr. Woolley, *loc. cit.*).

5.—Bilateral Sarcoma of the Ovaries. Fibroma Mammæ. 1 case. (See Martin and Hamilton, *Journ. Exper. Med.*, 1896, Vol. 1, No. 4).

6.—Bilateral Carcinoma of Breasts. Lipoma of Right Kidney. (R. V. H. 85--00).

7.—Angiosarcoma Cerebri. Endothelioma Pleuræ and of Liver Capsule. (See Woolley, *loc. cit.*).

8.—Adenocarcinoma of Rectum. Carcinoma of Pancreas. (R. V. H. 13/00).

9.—Carcinomata in Cæcum and Rectum. Fibroid of Uterus. (R. V. H. 80/00).

10.—Adenocarcinoma of Stomach. Carcinoma Simplex of Breast. Fibromyoma of Stomach. (R. V. H. 68/02.) (Here reported in full).

11.—Carcinoma of Bronchus. Fibroid of Uterus. (R. V. H. 77/95).

12.—Carcinoma Ventriculi. Fibromata of Kidney. (R. V. H. 29/96).

13.—Carcinoma of Urinary Bladder. Subcutaneous Lipoma of Trunk. (R. V. H. 83/96).

14.—Adenocarcinoma of Bile-Passages. Fibroid of Uterus. (R. V. H. 78/00).

15.—Scirrhus Carcinoma of Breast. Fibroid of Uterus. (R. V. H. 6/01).

16.—Carcinoma of Oesophagus. Fibroma of Kidney. (R. V. H. 7/01).

17.—Endothelioma of Meninges. Adenoma of Thyroid. (R. V. H. 24/01).

18.—Adenocarcinoma of Uterus. Fibroid of Uterus. (R. V. H. 7/02). 1 each.

The combination of fibroids in the uterus or elsewhere with other tumours is so common that no extended remarks need be made upon the subject, but I will only refer to the more important of the cases just presented.

The first is that of Mrs. A. B., *aet.* 67, (autopsy R. V. H. 68/02.).

Complaints: Pain in the side and swelling of the legs.

Family History: One brother died of cancer.

History of Illness: Began one year previous to admission to hospital with pain in the abdomen. Eight months later vomiting set in and continued three or four times weekly since. In two months more the abdomen began to swell, as well as the legs which have remained permanently thus. Twenty-six months before her death, or more than one year before the onset of symptoms, she had noticed a tumour in the abdomen.

Condition on Admission: An emaciated, feeble, old woman. In the right breast was a hard, nodular, and somewhat movable tumour, measuring one by two inches. Moderate arteriosclerosis. Signs of fluid in the left pleura. Occasional vomiting. The appetite was poor, the bowels constipated, and the abdomen considerably distended. On palpation, a hard, nodular, and somewhat movable mass could be felt between the ensiform cartilage and the umbilicus. The percussion note over the tumor and in the flanks was somewhat dull. The stomach contents contained no free hydrochloric acid. Total acidity, due to lactic and butyric acids, was 49%.

Autopsy.

Anatomical Diagnosis: Adenocarcinoma ventriculi: carcinoma simplex of right mamma: fibromyoma of stomach: left tuberculous pleurisy with effusion: compression atelectasis of the left lung: caseous tuberculosis of the peribronchial glands: senile kidneys: bilateral old pleural adhesions: decubitus: kyphosis and scoliosis.

Right Breast: In this there was a firm, lobular, tumour, measuring four by two c. m. The glands in the right axilla were enlarged to the size of peas. Microscopical examination of the growth proved it to be carcinoma of simple type, consisting of numerous strands and nests of epithelial cells of polymorphous appearance, embedded in fibrous tissue which in some few places presented a somewhat hyaline appearance. The carcinoma cells were round, oval, or irregular in shape. For the most part the sections showed a very diffuse cellular new-growth with relatively little connective tissue. In some areas the new-growth was seen to be massed about the vessels, and in one spot there was malignant infiltration of a vessel wall. One small arteriole contained a few carcinoma cells. Everywhere the cell masses were solid without any tendency to form lumina.

Left Lung: The pleural surface was studded with small greyish nodules the size of split peas. On section these were distinctly caseous. The peribronchial glands were much enlarged and caseous. Smears from the cut surface shewed the bacillus tuberculosis. Microscopically, the glands showed advanced caseous tuberculosis. The pleura showed in-

flammatory hyperplasia with organization and was diffusely infiltrated with round-cells. Here and there caseous foci with giant-cells were noted.

Stomach: The cavity of the stomach was almost obliterated, being occupied by a large new-growth situated on the lesser curvature, measuring 10 c. m. in diameter. This was roughly ovoid in shape, reaching to a point one inch above the pyloric ring, and projecting considerably as a fungating, cauliflower-looking mass into the cavity of the organ. Microscopically, this was produced by a tremendous overgrowth of the glandular elements of the mucous membrane. The gland tubes had run wild, being enlarged, tortuous, and branching. In some cases the tubes were enormously dilated and filled with colloid material. In some parts irregular acini were produced lined by stratified columnar epithelium. There was a distinct tendency to colloid degeneration of the cell masses. In other places solid nests of cells were noticed. There was abundant round-celled infiltration between the cancer masses. Where the tubules presented more of the normal type they were lined by a single layer of short columnar cells, but in the advancing portion of the growth the cells tended to be irregularly heaped up and were not so distinctly columnar. The muscular wall was considerably hypertrophied.

From the greater curvature of the stomach, at the posterior part of the fundus, depended a dense globular tumour, 8.5 c. m. in diameter, about the size of a cricket-ball, attached by a short, thick, ribbon-like pedicle of connective tissue. This tumour was warty on the surface, of a mottled grey and brown colour, with numerous flattened plaques of a pearly hyaline appearance. On section the mass was extremely firm, fasciculated, and of greyish colour, not unlike a uterine fibroid. Here and there were opaquer spongy areas of degeneration and also some extravasation of blood. Microscopically, the tumour consisted in the main of interlacing bands and irregularly disposed bundles of unstriped muscle enclosed in a fair amount of dense connective tissue. The growth was rather vascular and in places there was considerable hæmorrhage into its stroma. Areas of coagulation necrosis could also be seen with a slight tendency towards mucoid degeneration of the fibrous tissue. The cartilaginous-looking plaques on the surface were found to be hyaline connective tissue.

It might at first be thought that the nodule in the breast was a metastasis from the growth in the stomach, but on consideration it will be seen that there are several objections to this view. In the first place the tumour in the stomach had remained singularly local, there being no evidences of cancerous involvement of the peritoneum, the glands

in the neighborhood, the retroperitoneal tissues, or the portal vein. In the absence of cancerous involvement of the retroperitoneal tissues about the great vessels, or in the pleura, it is not easy to see how metastatic invasion of the breast could have occurred, seeing that it would have to take place through the long thoracic or internal mammary arteries. Only a few glands were found enlarged in the thorax and these were on the *left* side over the internal mammary artery. Further, the breast is a most unlikely site for metastases from a stomach growth. In eighteen cases of carcinoma ventriculi of which I have notes there is not one in which this occurred, even where the secondary deposits were most extensive. The extension of the malignant growth from the stomach is usually to the lymph-glands about the stomach, pancreas, and hilus of the liver, and I have been struck with the frequency with which the process invades the retroperitoneal tissues, and that early in the disease. Cancerous emboli in the portal vein with subsequent invasion of the liver and lungs are also common. A generalized dissemination of the cancer cells through the great vessels I have never seen. It is true that in a small arteriole in the midst of the cancerous nodule in the breast carcinoma cells were observed but these can be as well explained on the supposition that the new-growth had invaded the vessel from without, as was indeed observed in one place. A further point, although on this I would lay less stress, is that the growth in the mamma was of distinctly different type from that in the stomach, being composed of polymorphous and not columnar cells, which showed no tendency to form lumina, as is so strikingly the case in adenocarcinomata of the alimentary tract. The secondary growths originating from a colloid growth are particularly liable to be colloid also, yet there was no suggestion of this. The enlarged glands in the axilla could be just as well explained as being metastases from the mammary growth as from the stomach, or they might have been tuberculous. Unfortunately they were not removed for examination. On the whole, therefore I strongly incline to the view that the growths in the breast and stomach were separate and distinct, although, no doubt, the demonstration only amounts to a reasonable presumption.

In the case of cancer of the rectum with cancer of the pancreas, (case 8 supra.), the proof was quite clear. The growth in the bowel was the ordinary tubular columnar-celled adenocarcinoma: that in the pancreas was only just beginning, being found accidentally, and the connection of the carcinoma with the acini was quite manifest.

In the instances where two separate growths were found in bowel (9 supra.) it is possible that one may have been an implantation from the other, but I know of at least one case where there was a small

cauliflower-looking papilloma, which on microscopic examination proved to be as yet benign, while a short distance below was a much larger but similar growth which was distinctly cancerous. Here it was obvious that the cancer had originated in an ordinary papilloma separate entirely from the first. A somewhat similar instance has been recorded by Hauser (*Deutsches Archiv f. klin. Med.*, LV.).

The sixth case mentioned above was an undoubted example of two separate and distinct primary growths. Here there was a rapid development of scirrhous cancer in both breasts, which were equally and uniformly enlarged by a dense central growth, which eventually spread to the thoracic wall, converting the soft tissues into a firm cuirass-like growth of cancer. Here there was to my mind no possibility of implantation from one part to the other or of metastasis.

It will perhaps help us to a proper apprehension of the principles underlying the production of multiple new-growths if we can classify them into groups, and without attempting any elaborate system, I would suggest the following as a simple yet comprehensive view of this subject.

(1) Multiple Malignant Tumours, affecting

(a) One and the same organ.

Examples of these are furnished by the mixed carcinomatous and sarcomatous tumours of the thyroid gland, as recorded by Loeb (*Amer. Journ. Med. Sc.*, Feb., 1903) and Gideon Wells (*Journ. of Path. and Bacter.*, June, 1901). Also carcinoma and sarcoma in the uterus.

(b) Different portions of the same system, or its embryological derivatives.

Examples: case eight of my series; myelomata.

(c) Both members of a pair of organs.

Examples: cases one, two, three and four of my series.

(d) Different systems.

Example: case seven.

(2) Multiple Benign Tumours.

(a) In one and the same organ.

Example: fibroids of the uterus.

(b) In different portions of the same system.

Examples: submucous polypi in the intestines; fibromata and lipomata of the skin.

(c) In both members of a pair of organs.

Examples: fibromata of the ovaries or kidneys.

(d) In different parts of different systems.

Example: Angiomata of the skin and internal viscera.

(3) Combinations of Benign and Malignant Growths.

Examples: cases five, six, nine, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen and eighteen.

Before we can be certain that we are dealing with true examples of multiple primary growths we must be able to exclude metastasis, extension by continuity, implantation, and transplantation. We may indeed be able to draw positive conclusions if we accept the three postulates of Billroth, which are: (1) Each carcinoma must have a different histological structure; (2) The histogenesis of each carcinoma from a different parent epithelium must be proved; (3) Each carcinoma must form its own metastases. Yet without doubt these requirements are so rigid as to bar out a great number of positive examples, and, with Woolley, I think we may disregard them, and base our opinions on a much less iron-bound formula. It is self-evident that it is not necessary for multiple primary growths, even of carcinomatous or sarcomatous nature to differ in histological structure. The second postulate is one that would in some cases be impossible of proof, nor is it any more necessary than the first. Then again, the growths may not be sufficiently advanced to have produced metastases, and yet these are the cases where we are best able to determine the point of origin with certainty. In short, the postulates demand too much. In deciding the question we should be guided chiefly by the histological structure of the tumour, their localization, our knowledge of the course of metastases in special cases, and the analogy existing between these combined cases and the ordinary development of tumours in simple cases.

The bearing of this subject on the larger one of the causation of tumours in general is of interest but too great a question to enter upon fully here. It is clear that in many cases irritation plays a subordinate part if indeed it enters into the question at all. Cases such as the malignant adenomata affecting both ovaries simultaneously suggest an origin in some developmental vitium, such as embryonic "cell-rests," but admitting this we must still go farther back in our search for the cause. In fact, the theories of Ribbert and Cohnheim, and the parasitic theory are in no way strengthened from our study of multiple growths. Woolley has pointed out that in some instances certain organs that are functionally connected are the sites of simultaneous tumour growths. This "systemic affection" is well illustrated in a case recorded by Walter (*Arch. f. klin. Chir.* 1896, LIII.), where there were present an adenocystoma of the ovary, cancer of the breast, and cancer of the uterus. This would point to some grave physiological vitium underlying the process. But when we have said this we have

practically said all. We are brought back to the old story of a cancer "diathesis" or what is much the same thing the supposition of multiple regions of predisposition. We are as far as ever from comprehending the ultimate cause of tumour formation.

The association of active tuberculosis and advanced carcinoma is worthy of more than passing reference, as it is a subject of ever present interest to clinicians and has an important pathological bearing. The interest in this question dates back almost fifty years to the days of Rokitansky who stated that "an antagonism prevails between tubercle and carcinoma. Whenever their general correlation is susceptible of proof, cancer has succeeded to tuberculosis." Owing to the perfection of the microscope and the discovery of the specific bacillus of tuberculosis, any confusion between the lesions of the two diseases has long since been done away with, and the general result of later observations has been on the whole to strengthen the position taken by the great Viennese pathologist.

The most recent writer, MacCaskey (*Amer. Journ. Med. Sci.*, July, 1902), concludes that "apparently some antagonism existed between the presence of the toxins of tuberculosis and the conditions favourable to the development of cancer," and my own observations lead me also to a belief in some such antagonism.

In 685 autopsies at the Royal Victoria Hospital of which I have notes, tuberculosis occurred 234 times. It is of course well known that tuberculosis is a disease of the early part of life while carcinoma is found after middle age. Taking forty years as the age limit between the two diseases, in 60 persons who reached the cancer age of 40, who had active or latent tuberculosis, 10% developed carcinoma. In 243 non-tuberculous persons of the cancer age of forty or over, 22.22% were found to have carcinoma. In 65 persons over forty who had carcinoma 9% developed active or latent tuberculosis. Of 279 non-cancerous persons over forty 19% had active or latent tuberculosis. This would appear to be conclusive as to a mutual antagonism between the two diseases. Full-blown tuberculosis and carcinoma were found associated in 4.88% of carcinoma cases, a considerably larger proportion than the figures given by Williams (1.45%) in his article on the pathology of cancer in volume XVII, *Twentieth Century Practice*. Combining the figures given by Lubarsch, Zahn, Moak and myself, in 4,791 autopsies in which active tuberculosis was found carcinoma was present in 23 instances, a proportion of about 4.23%. It will thus be seen that the association of the two diseases in the early stages is much less frequent than the combination of carcinoma with latent and obsolescent tuberculosis, and this is in general accord with the published observations.

It is interesting that the simultaneous occurrence of tuberculosis and carcinoma in cattle when carcinoma is so rare, has also been noted. (Loeb and Jobson, *Medicine*, April, 1900).

The second part of Rokitansky's postulate is more difficult of proof. From *a priori* considerations its correctness would, however, seem very probable. Tuberculosis is notably a disease of childhood and the active period of life. The average age in simple tuberculosis in my figures was thirty-four. Carcinoma is still more preeminently an affection of the degenerative period. In sixty-eight cases only three were under forty. About a third of the tuberculosis patients reached the cancer age, a sufficiently large number to render the association of the two diseases with some frequency quite a possible event. In the few cases I have seen I have not been able quite to satisfy myself as to which disease began first, although I am inclined to think that in all cases the tuberculous infection was antecedent. It is difficult in many cases to be sure of the age of a tuberculous process from the gross appearance of the lesions, for the disease may remain latent for years in the glands before an active process is inaugurated. From our general knowledge of tuberculosis, however, we recognize that it commonly begins in early adult life and lasts for years, so that when carcinoma does occur in such patients, it is much more likely to be superadded to the tuberculosis than the reverse. This view is also supported by the fairly numerous instances recorded where carcinoma has developed in the lesions of lupus of the skin, cases which Ribbert has cited in support of his theory that the exciting cause of carcinoma is to be found in irritation or inflammation. The few cases described where tubercle bacilli have been discovered in a carcinoma do not negative this general conclusion for the infection is not primary but traceable to a previously existing tuberculous lesion somewhere else in the body. Considering the great frequency with which the two diseases, tuberculosis and carcinoma, occur, it is surprising that they are not more often combined. In what the relative antagonism exists is hard to say. It is clearly not a question of age, for as I have shown tuberculosis is common enough in advanced life, and we can eliminate the age factor without upsetting our general conclusion. It can, farther, be scarcely due to a condition of the soil, for in this case we would expect that where persons had suffered and recovered from tuberculosis they would be less susceptible to carcinoma, but as a matter of fact healed tubercular lesions are proportionately as common in cancer patients as in others. Either, then, considering that the antagonism only exists where there is active or latent tuberculosis, the antagonism

is not one of the soil or else the immunity is but a transient one. Default of a better explanation, we have to fall back on the view that there is a relative incompatibility between the toxins formed in tuberculous lesions and reaching the blood and the metabolic products of cancer growth.

The following papers contain practically all the references in connection with the subject of multiple primary growths:

Warthin. Multiple Primary Carcinoma. *Jour. Amer. Med. Ass.*, May 6, 1899.

H. Gideon Wells. Multiple Primary Malignant Tumours. *Journ. Pathol. and Bacter.*, June, 1901.

Woolley. Notes on Multiple Primary Tumours. *Boston Med. and Surg. Journ.*, Jan. 1st, 1903.

Loeb. Mixed Tumours of the Thyroid Gland. *Amer. Journ. Med. Sc.*, Feb., 1903.

THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS.*

BY

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Introduction.

Every means at our command should be employed to establish the diagnosis of pulmonary tuberculosis. In hardly any other disease is the importance of an early diagnosis so necessary. Time is everything, and the earlier the disease is detected the more hope there is of cure. Too often a diagnosis is first made when the best time for cure has slipped away. In advanced cases almost anyone can recognize the disease from the cough, expectoration and emaciation, but at the onset the symptoms are often obscure and less characteristic. In what follows I desire only to remind you of how one should proceed in a systematic way to make the diagnosis early.

History.

We should be uninfluenced by apparent good health in a patient. If he seems robust and comes from a sound family, many physicians hesitate to make a diagnosis of phthisis. An accurate history of the manner of onset should be obtained, and a careful search made for any precursory symptoms. From the history alone one sometimes makes a diagnosis even though there are no physical signs in the chest, no tubercle bacilli in the sputum, and though an animal experiment results negatively.

* Read before the Montreal Medico-Chirurgical Society, 17th April, 1903.

Precursory symptoms sometimes give us a strong clue, and of those which are particularly important, the most frequent are loss of weight, hæmoptysis, pleurisy, ischio-rectal abscess, bone and gland disease, and colds accompanied by coughs which persist unusually long. Any one of them may have occurred years before. For example, a woman of 67 spat some blood-tinged sputum in which tubercle bacilli were found. She also spat blood thirty-two years before, and, during the interval had no symptoms of tuberculosis.

One also derives great value from a searching history which embraces not only the family but also the associates of the patient. Cornet and most other writers do not recognize a specific hereditary disposition for tuberculosis. Children of tuberculous parents come into the world weaker than those from sound parents. By tuberculous parents I do not mean those who were once tuberculous years before, but such as at the time of conception had more or less advanced disease. There are no proofs that this weakness differs in any way from that which children of very delicate parents show, or from the weakness which is acquired during life from any harmful influence and makes the individual more susceptible to any kind of disease.

A history which merely states that a case of tuberculosis occurred in the family, even if this should be one of the parents, is of no value if it does not also state when the person concerned was sick and when he died, how the sputum was disposed of, and what amount of cleanliness was maintained in the room. To be of value it should inquire into the conditions of infection, and as to how long the newly diseased was with the former diseased person. If we obtain no history of contagion in the patient's family, we should inquire if the patient had been exposed to tuberculous persons among his associates either in workshop, school, office, or any occupation. The exaggerated notion of the influence of hereditary predisposition and the acquired weakness has produced injury to many persons.

Modes of Onset.

It is of great importance to know the modes of onset. Though the early symptoms are frequently masked, yet in the majority of cases they point directly to the lungs.

The most frequent mode of onset is a bronchitis, the prominent symptom of which is cough. For a long time the patient consoles himself that it is an ordinary cold. This is due to the fact that he does not feel at all ill, and it comforts him to know that many persons suffer from a harmless bronchial cough for years, or even for a lifetime, and yet remain healthy. The physician must think

otherwise. A cough which lasts longer than several weeks, or which tends to return, or which is usually present during the winter months, is always a suspicious sign, and should make us consider the possibility of tuberculosis.

At the onset of phthisis the cough is almost always dry and irritable and very obstinate, or it may consist of paroxysms of cough, or be accompanied by vomiting. It is most pronounced when the patient awakes in the morning, or when he lies down at night. Through the day it is often produced by loud speaking or laughing, or even without cause. It is also brought on by a deep breath. Many such patients also suffer from a nasopharyngeal catarrh and frequent colds, the colds having a tendency to go to the chest. Sometimes asthma is an early symptom.

In by far the majority of cases a hæmoptysis represents an existing tuberculosis, but it may not be due to this cause. It may occur as a result of circulatory disturbances, and may occasionally compensate or accompany hæmorrhoids or the menses. Hysterical persons may also for weeks at a time have blood tinged sputum and have sound lungs. So also after violent muscular exercise of any sort and after a trauma, a hæmorrhage can occur without being due to tuberculosis. When from the nose and mouth, the bleeding is usually insignificant, and can be recognized by a careful examination. Sometimes also when in larger amount it may be confounded with a hæmatemesis. But, if a patient feels a tickling in the throat, and after a cough expectorates frothy blood consisting of one, two, three or more teaspoonfuls, the physician will seldom make a mistake, if he considers it due to tuberculosis and treats it as such. "The classical hæmoptysis, that which is indicative of the onset of tuberculosis, is a bloody expectoration brought up for several consecutive days, usually in the morning, after cough." When the blood is small in amount, the patient is often told that it is from the throat, and is advised to continue at work till something further develops. This delay is frequently disastrous, and many lives are lost by such advice. The blood is usually not from the throat, but from the chest, and it should be regarded as an evidence of tuberculosis, till we have strong grounds for considering it due to some other cause.

The close relationship between a simple or idiopathic pleurisy and phthisis has long been known. Idiopathic pleurisy, whether we meet with it in the dry form or with effusion, is a common disease. The dry and exudative forms are evolution forms of the same disease, for not only pathologically but anatomically and clinically, the transition from one to the other is frequently observed. By an idiopathic pleu-

ris is meant a primary disease of the pleura, the cause of which cannot be explained. It is sometimes called the pleurisy of Landouzy. The term idiopathic is only a makeshift for our defective knowledge of the etiology.

When we meet with such pleurisies, whether they are dry or exudative, the question at once arises: how are we to consider them? Are we to agree with Landouzy, who stated that 98 per cent. of the sero-fibrinous pleurisies are tuberculous, and that every pleurisy, the cause of which cannot be explained, is tuberculous? Or does the pleurisy merely smooth the way for phthisis; this being brought about by the adhesions of the pleura, by the long compression of the lung, by the continued repose of the fallen thoracic walls, so that places of less resistance are produced which allow the tubercle bacilli to develop? Penzold's view is probably the one most applicable to this question. He considers as suspicious of tuberculosis every man with pleurisy.

The views of Landouzy and Penzold may seem extreme, but the following facts corroborate them to a considerable extent: Of 90 cases of pleurisy with effusion, the histories of which were followed by H. I. Bowditch, one-third developed pulmonary tuberculosis. Of the cases of pleurisy tested with tuberculin by Marcus Beck, 73.2 per cent. reacted positively.

Fever as an early symptom is one with which all physicians are acquainted, and an exact knowledge of it is one of the most important points for the diagnosis. The normal maximum varies in different individuals. In many it hardly reaches 98.4, whilst, in others it almost goes to 99.5. As the earlier temperature of our patients is unknown, probably 98.4 to 98.8 F. can be considered as an average maximum. An increase over 99.5 should be considered as a febricula. A two hour record is necessary to determine if fever be present, as otherwise a rise may be missed. The temperature may be taken by the patient, or better, by some member of the family. A slight afternoon rise to 99.9 or 100, which persists, and is assignable to no cause, should make us suspect tuberculosis, especially if it is accompanied by loss of appetite, loss of weight, and weakness. Sometimes the disease sets in with high fever and simulates typhoid, or with chills and fever and is then regarded as malaria. These cases should be especially watched during convalescence from the supposed disease, and the lungs frequently examined, for signs often do not develop until then.

In persons with chlorosis and especially in young girls latent tuberculosis should always be considered as a possible cause. All the symp-

toms of genuine chlorosis may be present, and the distinction between a real chlorosis and a tuberculous pseudo-chlorosis can be made only with difficulty. Emaciation can occur in both cases, though an increase in fat is more frequent in real chlorosis. The difference in the color of the skin possesses a doubtful value. Fever is frequently present in chlorosis, whilst the incipient stage of pulmonary tuberculosis is often free from fever. Even the blood, in the incipient stage of tuberculosis may give similar results to the chlorotic blood. An accurate history can occasionally give us an important point of distinction: namely, by establishing the opportunity for infection. Previous scrofulous glands point to tuberculosis. The tuberculin test, however, is our most important means of distinction. A failure to react permits one to exclude tuberculosis with a fair amount of certainty. The value of the test in these cases is emphasized by the figures of Marcus Beck who found that 50.3 percent of chlorotics reacted to tuberculin.

The onset with dyspepsia is very common, and the early symptoms may be great irritability of the stomach or a type of acid dyspepsia. Occasionally it is difficult to distinguish this from pure nervous dyspepsia, but in the latter the loss of appetite is usually less complete. When slight evening rise of temperature and loss of bodily weight accompany the dyspepsia, one should suspect tuberculosis. In nervous dyspepsia the weight may remain normal as assimilation goes on normally.

In some instances huskiness and laryngeal symptoms are the first prominent features of the disease. When they persist unusually long and do not yield to treatment, pulmonary tuberculosis should be considered as a possible underlying cause.

Neurasthenia is a common symptom of many cases of phthisis. It may be the first symptom and be so great as to entirely mask the real trouble.

Pain in the chest may precede other symptoms by months or even years. I am more and more struck with its great frequency as a very early sign. Cough and pain are probably the most frequent early symptom. When first felt the physician usually regards it as rheumatism, pleurodynia, or intercostal neuralgia.

At this time there is frequently no rub to be heard at the seat of the pain, and for this reason pleurisy is excluded.

It is often described by the patient as a stitch, and occurs particularly after such acts as sneezing, blowing the nose, fast walking, or laughing. It is more apt to be felt in damp weather, or when the patient is suffering from a cold in the head. Later on, should the disease develop, that side of the chest in which the pain is felt will have evidence of disease. It is most commonly felt under the shoulder blade,

though it may be felt in any part of the chest. It is usually localized, and when it recurs, tends to recur in the same place. Occasionally, however, it radiates to the shoulder joint and upper arm.

A fast pulse is a very striking and frequent symptom of phthisis. If fever exists, an increase in the pulse is accounted for by it. It may, however occur entirely independent of fever, and it should then especially in young persons awaken the suspicion of tuberculosis. At the onset the pulse is more easily excitable, and the acceleration occurs after meals, or after slight bodily exertion as stooping or walking. Towards evening there usually occurs an abnormal frequency of 90-100. As the disease advances there often remains a certain increase in the frequency of the pulse at rest, and a further increase is caused by the factors already mentioned.

A very frequent early sign is shortness of breath which is observed as light dyspnoea on going up stairs, climbing mountains, dancing, or similar bodily exertions. Sometimes the dyspnoea takes the form of an asthmatic attack and occurs in the middle of the night.

Physical Examination.

Though the history should give no support for tuberculosis, the lungs should always be examined if the complaints of the patient point to them even indirectly. The physical examination still remains the most important physical means for the early diagnosis of phthisis. The tuberculin test is the most searching test we have, and is our final court of appeal, but it is at the command of only comparatively few. The physical examination is at the command of every physician, and correctly used it permits us to form a definite conclusion in many cases where the expectoration is free from tubercle bacilli.

I shall not go into the details of physical examination. We should always keep in mind, however, that the first signs of incipient pulmonary tuberculosis—depression, feeble breathing, prolonged expiration and râles,—are almost always to be found in the apices. The tops of the lungs should therefore be examined with the greatest care, and every deviation from the normal should be considered as suspicious of disease. Though comparatively seldom, the first tuberculous deposits can occur in other places, and one should therefore always extend the examination over the whole chest. It is well to remember that râles are often only produced by cough followed by a sharp deep inspiration.

Examination of the Sputum.

The simplest way to confirm a diagnosis is to find tubercle bacilli in the sputum. It should be our aim, however, to detect the disease before bacilli are present, for when they can be repeatedly demonstrated

without trouble we are, as a rule, not dealing with an incipient case. Repeatedly finding numerous tubercle bacilli in a copious sputum permits one to conclude that destruction of lung tissue has already set in.

At the onset of the disease expectoration is seldom present. At best there is expectorated in the morning a tenacious mucous from the upper air passages, and tubercle bacilli are rarely found in it. To obtain an expectoration from the lung, the cold water compress is of service, and can be used in the form of the German Kreuzbinde. This consists of cold water compresses covering the front and back of the chest, and kept in place by straps or bands which pass round the neck, across the chest, and under the arms. It is applied at night, and remains on till morning. On removing it the chest and back are quickly rubbed with a cold wet towel. The shock excites the patient to cough, and the secretion which collects from the moist warmth of the packing is now expectorated.

Should bacilli not be found, the sputum should be collected for several days and then treated in one of the following ways in order to homogenize it. Moeller's plan is to pour the sputum into a glass cylinder and add a little water. He then throws in a number of coarse gun shot and thoroughly shakes the whole mixture. After removing the shot, he centrifugates the homogenized mass and seeks in the sediment for tubercle bacilli. E. W. Hammond strongly recommends the carbohc method. His modification of the method consists in adding an equal volume of 5 percent carbohc acid to the sputum and then briskly shaking the mixture for a few minutes; by this means the mucous is broken up and disintegrated. It is then allowed to settle. Sedimentation takes place rapidly, and within an hour an examination can be made. He then uses a pipette of small calibre and examines the deepest portion of the sediment in the usual way.

A third method was that used by the late Coppin Jones of Davos. He took $\frac{1}{2}$ gramme of trypsin and rubbed it up in a mortar with $\frac{1}{2}$ per cent. sodium carbonate solution, then transferred the sputum to this and added a few drops of phenolphthalein, and allowed to stand for twenty-four hours. Should at any time the phenolphthalein decolorize, add more sodium carbonate, until the pink color disappears. When digestion is completed, centrifugate and examine for tubercle bacilli.

Biedert's method consists in mixing with a glass rod in an evaporating dish, 15 c.m. of expectoration, 30 c.m. of distilled water; and 4-8 drops of sodium or potassium hydrate; then slowly boiling and at the same time gradually adding 60-90 c.m. of distilled water; then

sedimenting in a conical glass for twenty-four to forty-eight hours. When examining the sediment it is often necessary to add some albumin or some of the sputum of the patient to fix the specimen.

A further means of help is that known as the "enriching method," and is due to the fact that an increase of tubercle bacilli takes place at incubator temperature. The increase ceases in about forty-eight hours. Perhaps the best known enriching method is that known as "Hesse's." For a full account of this, one is referred to the *Zeitschrift für Hygiene*, July 31st, 1899.

Hesse's medium consists of:—

Heyden's Nahrstoff	5	gram.
Salt	5	"
Glycerine	30	"
Agar agar	10	"
Normal soda solution	5	C. Cm.
Distilled water	1000	" "

The method consists in putting about 20 cm. of the culture medium into a double Petri dish. Immediately before the experiment, the patient spits into a sterilized glass. Previous rinsing out of the mouth is unnecessary. One then takes from the sputum by means of a strong platinum wire a piece of purulent mucous the size of a lentil, and draws it in a circle on the surface of the culture medium. About forty-eight hours later remove the dish from the incubator, and examine the mucous for tubercle bacilli.

Moeller's enriching method consists in spreading on the bottom of a Petri dish several flecks of sputum. To prevent the sputum from drying he puts the dish into a moist chamber, and places the whole in the incubator at 37° C for forty-eight hours. He finds that the tubercle bacilli are most easily found when the under surface of the sputum is examined.

Animal Inoculation Experiment.

If one does not reach a positive result by these methods, an animal experiment remains. The guinea pig is the animal of choice.

To do an animal experiment the following directions may be of value. To establish the tuberculous nature of a fluid, or of a substance which can be emulsified into fluids, the intraperitoneal method is always preferable. This allows the smallest number of living bacilli to be developed, excludes with most certainty every infection, and gives an anatomical picture which differs most characteristically from a spontaneous affection of the animal. A small surface of the ab-

domen of the animal should be shaved and thoroughly cleaned; then the infectious material which was obtained under aseptic precautions, is diluted in about 2-3 c.m. of sterile fluid, and is injected by a sterile syringe into the peritoneum. The seat of injection is closed by collodion. If there are likely to be numerous living tubercle bacilli in the material injected, the animal is killed in three to four, rarely in seven weeks, and by the autopsy the tuberculous or non-tuberculous nature of the injected material is established.

With a material which cannot be well suspended in liquids, the subcutaneous injection is preferable. Prepare the groin of the animal as above; make a small slit in the skin with scissors; with a strong sterilized platinum wire make a pouch about 2 c.m. long between skin and muscles and beneath the fascia; make the material to be injected as small as possible and plant it in this pouch; cover the skin wound with collodion. In many cases a swelling of the inguinal glands on the affected side can be observed in 8-14 days. The animal is killed in five to nine weeks.

Tuberculin Test.

Should the animal test turn out negatively, one can take for granted with a fair amount of certainty that no tubercle bacilli are expectorated, or that they are very few in number. This fact, however, does not exclude the presence of tuberculosis, and the tuberculin test must give us the decision. It can be used in all those cases where by all methods of help, no tubercle bacilli can be demonstrated in the sputum, where at the same time there are either doubtful or no physical signs in the chest, but in which the suspicion of tuberculosis still exists. In the *Deutsche Medicinische Wochenschrift*, April 1, 1897, Kock says: "the most valuable property of tuberculin is, that injected subcutaneously in very minute doses, it gives rise to the characteristic reaction in persons and animals affected with tuberculosis. The use of tuberculin as a diagnostic agent, a fact which I emphasized in my first publication on tuberculin, has more and more held true in the course of time. The apprehension that, following the reaction, the tubercle bacilli might become unfettered and transplanted into healthy parts of the body, has proved to be futile in the many thousand injections into cattle made for the purpose mentioned. This fully agrees with my own experience in more than a thousand cases in which tuberculin was used for an early diagnosis of tuberculosis. Here, too, in not a single case could there be detected the slightest indication pointing to an unfettering of tubercle bacilli. With such experience at one's command one ought to abandon the silly prejudice

of the unfettered bacillus, and make use of the diagnostic value of tuberculin." Trudeau, also, who has used the test for years on suitable cases has never experienced any harmful results at the time or afterwards.

The advice given by Koch for the employment of the test for diagnostic purposes is as follows: "First the temperature of the patient is observed for at least one, better two days, in order to ascertain that the temperature vasculates under 98.6 F. Patients with temperature above that are not suitable for the diagnostic treatment with tuberculin, and should under no circumstances be subjected to the tuberculin test. When the patient is found suitable, then he gets in the afternoon, under the skin of the back, an injection of from 1-10 to 1 milligramme of tuberculin; delicate individuals get 1-10 milligramme, strong individuals with presumably slight tuberculous changes may receive 1 milligramme for the first injection. If no rise of temperature follows the first injection, then the dose is doubled, not however on the second day but on the third. If, however, the temperature rises only a little, say $\frac{1}{2}^{\circ}$ F., then the dose is not increased, but is repeated after the temperature comes down to normal. Very often it will happen that though the dose remains the same, the reaction will be much stronger. This is a particularly characteristic phenomenon of the action of tuberculin, and can be regarded as a sure symptom of the presence of tuberculosis. If, however, after the first low doses no reaction takes place, then they are increased up to 5 milligrammes, and then to 10 milligrammes. The last dose I advise for safety's sake to be given twice, and if after that no reaction appears, I consider myself justified in the opinion that there is no fresh or active tuberculosis present which would require any special treatment."

Marcus Beck begins with 1 milligramme even with weakly patients. In children under ten years he advises to begin with half a milligramme, and then inject 1 and 5 milligrammes. In children under five years he begins with 3-10th milligramme, and then injects 1 and 5 milligrammes.

Trudeau's method is really that of Koch's with slight modifications. The injections are given at night—as late as possible—since the reaction sets in as a rule about 12 hours later. In order to obtain a clear picture, he orders a two-hour temperature to be taken for several days before and following the injection. His solutions are made up of $\frac{1}{2}$ percent carbolic acid and are always used fresh. They should never be kept for longer than three days, and should be kept in a cool dark place. He begins with 1 milligramme, gives 3 milligrammes for the

second dose, and 5 or 7 milligrammes for the third. Moeller and Beck regard as a reaction an increase of 1° F., above the fixed normal temperature. The gravid uterus in the first six months, and the menses are not regarded by Beck as contra indications to the test.

When we stop at 5 milligrammes with no reaction, we only obtain an uncertain result. We should therefore always go to 7 or 10 milligrammes and never go beyond 10 milligrammes. My own experience with the tuberculin test now covers a period of seven years. I have used it in all those cases where I was unable to make the diagnosis by other means. It has been of great assistance, and I have never observed any ill results.

I need only mention one case to illustrate the great value of the test. A young man of 31 years came to the Adirondacks in the spring of 1902, complaining of cough and expectoration. Both had lasted six weeks when he spat some blood-tinged sputum. As the symptoms were accompanied by some loss of well being, a diagnosis of tuberculosis was made from the history alone. There were no physical signs in the chest and no bacilli in the sputum, and for these reasons the patient, who was a physician, was strong in the belief that there was no tuberculosis. Within three weeks the cough and expectoration had left him and he was then given the tuberculin test. The third dose of 7 milligrammes produced a reaction. After remaining three months in the mountains he went to Montana. A short time ago he wrote me that he had his usual spring bronchitis, but that he was much above his normal weight, and was feeling in excellent health. The sputum which he sent for examination showed a few tubercle bacilli.

It is comparatively seldom that one needs to use tuberculin. In my own practice I do not use it more than twice a year. A similar number of times for its use occurs in the practice of my colleagues.

The communication of E. France at the London Congress illustrates the certainty with which tuberculin shows the presence of tuberculosis. He tested 55 persons in an insane asylum with tuberculin, and found that 45 of them reacted. Of those that reacted, 29 came to post-mortem at a later date, and every one was found tuberculous. Of those that did not react, 5 were examined post-mortem and every one was free from tuberculosis.

Agglutination Test, or Arlong-Courmont Method.

When it was known that the serum of animals that had been injected with bacteria, after a time possessed agglutinating power over the same bacteria, and further that human serum agglutinates typhoid, cholera and plague bacilli if the patients suffered from typhoid, cholera

or plague, it was then suggestive that the blood of tuberculous individuals would agglutinate tubercle bacilli. Tubercle bacilli, however, are an obstacle to a similar investigation, as they form in their cultures compact masses which are already to some extent in an agglutinated condition.

To overcome this difficulty, Arloing and Courmont cultivated the bacilli on potatoes, and finally obtained a culture that grew evenly distributed in the form of an emulsion in the glycerinated liquid at the bottom of the tubes. From these they finally obtained their homogeneous cultures. They tested these cultures with respect to their power to be agglutinated, and obtained positive results when they added blood serum, or serous exudates, of tuberculous individuals or animals. With these two observers the test is so reliable that it can be used in practice for the early diagnosis of tuberculosis. Several French authors, and in Germany only Bendix, corroborated these statements.

The reaction of the serum, however, might fail in cases of undoubted tuberculosis, and occasionally appear in non-tuberculous cases. The method has been given a fair and unprejudiced trial by C. Frankel, Lubwosky, Neisser, Dieudonné, Horeika, Moeller, Beck and Rabinowitsch. All of these observers frequently obtained contradictory results, and they consider the method unreliable and not applicable for early diagnosis.

In his investigations into the relation of cattle tuberculosis to human tuberculosis, Koch attempted to use the agglutination test as a means of differentiating the two bacteria, and tried to follow the method of Arloing and Courmont. He found, however, that for practical use their method was too complicated, and that it did not give any uniform and reliable results. He, therefore, sought for another way to render the tubercle bacilli in a condition in which they can be agglutinated, and he accomplished this very simply and without the tedious treatment which Arloing and Courmont employed. He found that by his method every kind of culture can be made to agglutinate. He then improved the method by using powdered tubercle bacilli. This has the advantage that one can obtain a sure estimate from it, can weigh out accurate amounts, and can prepare a test fluid which always has the same composition.

He tested thirty tuberculous and seventy non-tuberculous patients. Taken as a whole, a distinct difference in the agglutinating power between the tuberculous and non-tuberculous patients did not appear. He considers the agglutination method for the diagnosis, and especially for the early diagnosis of tuberculosis, as of no value.

Röntgen Rays.

Occasionally one will make a surprisingly early diagnosis by the Röntgen rays. The shadow or the skiagraph shows tuberculous nodes much the more distinctly the older and more extensive they are, but it is less certain in the earlier stage. This is very natural, since cicatricial tissue and calcification offer greater resistance to the rays, whilst developing small nodes are either penetrated or are not visible on account of their size and position. There can be no doubt, however, that the X-rays are sometimes able to show a small tuberculous focus in the lung when a physical examination does not locate it. In skilled hands they are able to demonstrate really early tuberculosis, but in the vast majority of cases a physical examination forestalls Röntgen rays in proving change in the lung.

Examination by the radioscope and radiograph shows a diminution in the clearness in some part of the lung, usually in the apex, often accompanied by a diminished descent of the corresponding half of the diaphragm. For a time the diminished descent of one half of the diaphragm may be the only symptom observed, and the lung may seem clear. It is, therefore, a symptom of importance. The extent of the lesions is often better indicated by X-rays than by any other method of examination.

In conclusion, I wish to thank the members of this Society for the honour and privilege of reading this paper.

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TWO PRACTICAL DEDUCTIONS

From a Living Case of Tendon Grafting for a Deformity Resulting
From Anterior Poliomyelitis.

BY

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Two years ago this boy was brought before you. He had been operated on three months previous to that time; one-half of the tendon of the Tibialis Anticus Muscle had been grafted into the most internal tendon of the Extensor Communis Digitorum of the foot, and the remaining half had been united to the tendon of the Extensor Proprius Hallucis. At the date of the operation the condition of his foot at rest was that of marked valgus. On attempted locomotion he walked with that limp, foot-drop, and swinging gait which is so characteristic of paralysis of the Anterior Tibial Muscle.

On electrical and clinical examination the following conditions were noted:—Tibialis anticus, little or no power; Tibialis posticus, little or no power; Extensors of foot, impaired in function; Extensor longus digitorum, normal; Peroneus tertius, probably normal; Extensor longus hallucis, normal; Peroneus longus and brevis, doubtful.

Three months after the operation when he was brought to your notice great hopes of improvement were expressed in these words: "By the improved position of the child's foot it seems probable that there has been perfect union of the tendons grafted, and although the patient's left leg is never likely to be in as good condition as that of his right, it can at least be hoped that the improvement will be progressive, as the Common Extensor and Proprius Hallucis muscles become stronger and better able to do not only their own work, but also that of the Anterior Tibial."

When these words were written it was hoped that the patient would be submitted for continuous treatment. Massage, active and passive exercises of the atrophied muscles were recommended, but the child

* Read before the Montreal Medico-Chirurgical Society, 3rd April, 1903.

disappeared, and, instead of being brought before you to-night, to demonstrate a continuous improvement he is brought to illustrate two important facts in the consideration of surgical treatment for deformities following Anterior Poliomyelitis.

(1) The existence of a new or artificially placed tendon extending from the Common Extensor to the place of insertion of the Tibialis Anticus, which is so clearly seen on attempted flexion, demonstrates our ability to graft slips from a paralyzed to a non-paralyzed muscle, and the fact that these slips can certainly be expected to help to do the work of the paralyzed muscles.

(2) The fact that the same deformity exists to-day as was demonstrated two years ago draws our attention to the fact that although an



operation done, as in this case two years ago, may be surgically a success, from a practical standpoint it may not be successful.

This case, however, is not brought before you as a demonstration of the uselessness of these operations in the treatment of such deformities arising from Anterior Poliomyelitis, but rather as an illustration of our inability to improve these conditions by operative procedures alone; each operation must be followed by watchful care, massage, active movements and passive movements, both by the use of electricity and by manual force and proper supports, which will prevent contraction of the non-paralyzed muscles, must be employed or we cannot hope to materially improve the condition of those submitted to our care.

Whitman in speaking of these cases says: "As ordinarily performed the pre-existing deformity is over-corrected and the foot is then fixed in a plaster bandage for several weeks or months until the position of over-correction is so impressed upon it, that, on the removal of support,

functional success seems assured. This primary effect persists for a certain time, until the shortened tissues again stretch and the grafted muscle is subjected to the full strain of use, when functional weakness again becomes manifest. This partial relapse may be delayed or prevented by massage, exercise, and appropriate support; in other words, by the care that almost always makes a result in private practice better than in hospital work," (2), and again an English surgeon, Mr. Robert Jones, of Liverpool, states: "Operations if they are performed only attain their purpose, when followed by prolonged, intelligent, and carefully thought-out after treatment." (3)

You have now seen this child twice within the past two years, and it is to be hoped that he will not be lost sight of again; in which case, I trust to have the pleasure of again bringing him before you, at intervals of one or two years in order that we may study the progress of this case.

In the meantime as regards the prognosis; examination to-day demonstrates a difference of about three inches in the circumference of the two calves. The circumference of the right thigh is about twelve and one-eighth inches compared with ten and three-quarter inches on the left. The power capable of being exercised by the Tibialis Posticus is, as it was two years ago, almost, if not entirely, nil. Can we expect any improvement? I am not without hope. I would like to aid the Tibialis Posticus, which has been proven by hyper-inversion to be even now capable of some action, by grafting into it a slip of some adjacent tendon, which, possibly at present, is tending by its strength to increase the deformity, and thus to convert a power for evil into a power for good. I would like to follow this operative procedure not with rest in plaster of Paris for three months as was done after the first operation, but, with rest in plaster for a few days only; and this treatment should be followed by a brace which will prevent the contraction of the non-paralyzed muscles and the consequent stretching of the newly formed tendon. During this period between the applications of plaster of Paris and on the removal of the brace, one should attempt to improve the general condition of the muscles involved, by massage, active movements and passive movements, made both by manual force and through the use of electricity.

1. Montreal Medical Journal, 1901.

2. Royal Whitman, New York Medical Journal, 26th May, 1902.

3. Robert Jones, Lancet, 14th March, 1903.

A CASE OF ACROMEGALY.

BY

RICHARD KERRY, M.D..

Oculist to the Montreal Dispensary.

Two years ago a gentleman, 50 years of age, came to me for consultation as to the condition of his eyes. He stated that he had suffered severely from rheumatism for some years and from intense headache. Two years previous to my seeing him, his eyes had been examined and a very unfavourable prognosis was given. After a course of treatment with medicinal waters he was much improved, but the old symptoms returned shortly previous to his visit to me.

Examination revealed marked atrophy of the left disc, the function of the eye being reduced to slight perception of light with the temporal half of the retina. The right disc was of bad color, vision, with correction, one-third of normal; the field for white was normal and green was not distinguished. At a later examination the right field was found contracted, especially on the temporal side. The condition of the left eye was probably due to pressure from an enlarged pituitary gland upon the left optic nerve, and the condition of the right eye, to some extent, to degenerative changes independent of pressure. Whilst examining the sphenoidal sinus for evidence of empyæma, I was struck by the enlargement of the tongue and great thickening of the uvula and fauces, so marked as to render examination of the post-nasal space a matter of considerable difficulty. These changes in connection with the thickening of the tissues about the face and the ocular condition, suggested a diagnosis of Acromegaly.

face and head were broad and massive, the cartilages of the nose enlarged and very wide, the lips thick, the lower one pendulous. There was a marked kyphosis in the upper dorsal region, the sternum wide and thick, the abdomen round and protuberant, recalling the condition found in cretins. The hands and feet were much enlarged, the hands spade-like, the fingers being as thick at the end as at the first joint; the pad of tissue over the hypothenar eminence was fully an inch and a half in thickness. The patient had a peculiar dull and listless air and though the intellect was not impaired, the cerebration was slow and both animation and emotion were largely in abeyance. Generally speaking the case was characterized by an absence of marked change in the osseous system.

Naturally in considering treatment one would think of pituitary gland as a remedy, but as the patient's physician, Dr. Elder, had already placed him upon thyroid treatment, which was followed by

* Read before the Montreal Medico-Chirurgica Society, 3rd April, 1903.

marked improvement, and as published reports of the use of pituitary gland substance and of its various preparations were upon the whole unsatisfactory, this was not recommended. Under the treatment the patient lost weight and was almost completely relieved of his distressing headaches.

Shortly afterwards the patient proceeded to Berlin where the diagnosis of acromegaly was confirmed. He was given tablets of pituitary substance and a bottle of liquid—Iod-Thyrin, possibly—to be taken alternately, a month each, for six months. This time has not yet expired. At present, save for his eyes, he is very much improved in every way. He has lost weight, the face is nearly normal, although some thickening of the nose and lips remains. The cerebration is more active and the movements quicker.

A study of the pathological changes present in acromegaly inclines one to sum up the net result in the word "Confusion." Practically every tissue of the body undergoes more or less important change; but the lesions present in different cases are so diverse, that the possibility of variation in the etiological factors is at once suggested, and the question arises as to whether we are dealing with an entity or with a group of allied affections. Increase in the quantity of the blood in the body which is stated by some authorities to be present, from the large amount found post-mortem, may be the direct cause of some of the tissue change. The rare condition of true hypertrophy of glandular tissue is also present. These two conditions probably have great influence upon the trophic changes.

Marie was the first to call attention to the changes which occur in the Hypophysis Cerebri in acromegaly. He thought that these were probably due to some changes in the sympathetic system. In this connection it is interesting to note that Berkley, in his paper on the Anatomy of the Infundibular Region, states that sympathetic fibres only are found in the pituitary body. But whether the changes in the pituitary body depend upon deeper-seated causes or not, there seems little doubt that interference with the hypophysis produces many of the changes found in acromegaly.

In two hundred and ten cases reported by Sternberg, (*Die Akromegalie*, Nothnagles system of medicine), hypertrophy of the hypophysis was present in nearly every case, while degenerative changes were present in the balance. An examination of reported cases gives the following classification:—

1. Simple hypertrophy of the gland with acromegaly.
2. Sarcoma of the gland with acromegaly.

3. Sarcoma of the gland without acromegaly.

4. Acromegaly without tumour of the gland.

This showing proves that the causal relation is by no means a simple one.

Furnivale furnishes the following analysis:—In thirty-four cases, there was hypertrophy of the hypophysis in thirty-one and degeneration in three; in twenty-four cases there was hypertrophy of the thyroid in eleven, atrophy or degeneration in eight, and five were normal; in seventeen cases, there was hypertrophy of the thymus in four; in six cases the thymus was persistent or redeveloped, and in seven absent.

Considering the variation in the condition of the ductless glands, and that certain cases of acromegaly have been preceded by a myxœdematous condition, it would seem that we might look for some explanation of the complicated symptomatology in the changes in these glands.

Naturally in this connection the question as to the function of the pituitary gland arises. Von Cyon (Pflüger's Archives, Vol. 87), thinks it probable that the hypophysis contains two principles, one of which stimulates the vagus centre and the other the centre for the *accelerans*. By these means, as well as by increasing the venous flow, especially through the thyroid veins, it controls the inter-cerebral pressure and acts as a protective mechanism to the brain. It also has a marked effect upon tissue change, producing increased excretion of nitrogen and of phosphates.

Stimulation of the hypophysis produces polyuria, and the same effect followed the administration of extract of the gland to a boy suffering from acromegaly. The diabetes so often associated with acromegaly appears to be due to degenerative changes in the pancreas and not to the action of the hypophysis.

Schiff (Wiener Klin. Wochenschrift, 1897, p. 277), shows from carefully conducted clinical work similar results. He kept several patients upon a diet of definite caloric value until the nitrogen excreted had been constant for several days. He then administered hypophysin tablets and noted great increase in the excretion of urine, urea and phosphates; the last he found particularly in the *fæces*. He had previously given Iod. Thyrine to the same patients with relatively little result. In one case, a healthy man of twenty-five, no results were apparent from either tablets or Iod. Thyrine, except some increase of urine without a corresponding increase in the nitrogen excreted.

Lloyd Andriesen (*Brit. Med. Journ.*, Vol. I, 1894), investigating the hypophysis from a morphological standpoint, finds that in certain larval and adult Cyclostoma and Ascidiæ there is a communication from the buccal cavity through the anterior ventral neuropore, infundi-

bulum and ventricular spaces, with the central canal of the spinal cord. By means of an emulsion of carmine he has been able to follow the circulation of water from the mouth to the neurenteric canal. He observes also a group of specialized nerve cells at the base of the brain and around the opening of the infundibulum into the neural canal, and that the glandular portion of the hypophysis discharges its secretion into the infundibulum where it mingles with the incoming stream of water. He considers that these cells act as a sensory organ and serve to test the water and that the secretion assists the absorption of oxygen by the nerve tissue.

Among more highly developed animals the aquo-vascular system ceases to function and is replaced by a blood system. The hypophysis, however, does not atrophy, but increases in size relatively and is very richly supplied with blood, sufficient proof that the gland still functions actively. The nerve cells show regressive changes and the epithelium lining the infundibulum loses its ciliæ and becomes atrophic. In the Cyclostoma and some of the fishes the hypophysis is relatively large, but in the higher orders it becomes progressively smaller, evidence that the gland is most active amongst aquatic creatures.

Andriesen draws a most interesting parallel between the hypophysis and the thyroid gland. The latter, he says, is developed in anatomical connection with the respiratory system, and physiologically is connected with the gaseous metabolism. He considers that both glands are respiratory in function and shows that the changes produced by interference with their function are such as would be expected from deficient oxidation.

It is a striking fact, that the three observers quoted should have arrived at the same conclusion by such different methods, and attribute to the hypophysis such a marked influence upon oxidation.

Among the interesting questions which suggest themselves for solution are:—the relationship of the aquo-vascular system to the development of the embryo in the higher orders; the reason for the non-occurrence of acromegaly in certain cases of tumour of the hypophysis; the bearing of hypophysis on Exophthalmic Goitre; whether the Iodine contained in the secretions of the thyroid and pituitary glands converts ordinary oxygen into the nascent form (as chlorine does in bleaching), and so promotes metabolism.

We have in the hypophysis a remedy of great and undoubted power. Von Cyon (*Die Physiologische Hertzgifte*, Pflüger's Archiv.) has even been able by means of hypophysin to neutralize the action of atropin upon the heart, after it had become well established. The clinical determination of the value of preparations made from hypophysis in

acromegaly, is rendered difficult by the fact that many cases have been placed upon combined treatment, with thyroid and hypophysis, and that in others marked remissions in the course of the disease may occur. The relief which is obtained from the intense headache, by preparations made from both pituitary and thyroid glands, is however sufficient reason to warrant their employment, quite independently of other reasons.

The amount of work done recently in connection with the ductless glands is so considerable, that even a mere reference in a paper of this kind is impossible. A perusal of some of the more recent original papers will be found full of interest and will prove most instructive.

The Halifax Medical College is just about closing its 34th session. The year has been a very successful one. Twenty-one students will go up for the final examination for the Dalhousie University degree in medicine. It seems rather anomalous that the Halifax Medical College should only prepare men for the examinations set by another college, but for several years past the students have unanimously elected to go up for the University degree. The Medical College maintains a separate existence simply because a provincial grant comes to it as long as it remains as it now is. Should it become in name, what it very nearly is in fact, a faculty of Dalhousie, this grant would, according to provincial laws, be forfeited. Inasmuch as the present arrangement is, in the main, satisfactory, it is unlikely there will be any change made in the immediate future.

The death of the Lieutenant-Governor of Ontario appears doubtless to the general public to be the result of two unfortunate accidents. It is nearer the truth, however, to say that he succumbed to those slowly developing changes designated as senile. The osteoporosis so common in elderly people, had evidently in the case of the Lieutenant Governor become extreme; in fact, one may assume that a condition of *fragilitas ossium* prevailed. It cannot be clearly determined from the official statement of the medical gentlemen in attendance at just what point the first fracture occurred. From the history of the accident, one would naturally place it about the neck. It is a great art to be able to give out a written official statement of over two hundred words, without saying more than was said in the one relating to the death of the Lieutenant-Governor of Ontario.

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THE FACULTY OF COMPARATIVE MEDICINE AND VETERINARY SCIENCE.

The work of a University is never completed. Success in one direction entails labour in another to keep all parts of the organization in harmony. The present high position of McGill University is due primarily to a recognition of this principle. In 1885 the Medical Faculty definitely took the lead by the enlargement of its facilities for teaching; it was quickly followed by the Science Faculty, which soon reached a commanding position. Then the Law Faculty took up the running and put itself well abreast of its fellows; the Arts Faculty which was relatively behind, was the next to receive attention, but in the meantime the enormous development of the Medical School in laboratories, lecture rooms and all the essentials of teaching, lifted the standard still higher.

In this laudable competition the Faculty of Comparative Medicine was left behind, not from any lack of diligence, but from the nature of the case. Ten years ago, the Veterinary School, which had long before been established by Dr. McEachran, had a standing equal to that of

any similar institution in America. At that time the course of study was only two years; it was purely practical in its nature, with little or no instruction in the preliminary scientific subjects of Physics, Chemistry and Physiology. Then the Dean demanded a three years' course, and full prominence was given to the scientific side by the occupants of the Chairs in the Medical Faculty. Those were the great days of the Veterinary School; men came from the United States and from all parts of Canada; they were imbued with the scientific spirit; they carried it away with them and instilled it into the schools all over the continent, with which they soon became identified.

Largely as a result of Dr. McEachran's good work with his own students, other schools have arisen in the United States. The teaching has been taken up by the large Universities and by the Commonwealths, and these bodies have given to it the attention it deserves.

Single-handed, out of his own monies, from the fees received from students and from an inconsiderable annual subvention from the Provincial Government, the Dean has not been in the position to keep the school upon a level with those so liberally supported by State and University bodies. Assistance from outside was necessary if he were to build and equip laboratories and a proper hospital and to gather round him a staff of specialists. That assistance he has not received, and, as a consequence, the school, instead of occupying its former place, has been distanced by its competitors.

Through the force of events the position of the Dean had become untenable and he has resigned. The University is now face to face with a hard problem. It has never been its custom to maintain any weak member, it has nourished and developed it, and can do so in the present case, if that course be considered preferable to cutting it off altogether. Indeed there is something to be said in favor of this extreme measure.

The subject of Veterinary Medicine has entirely shifted its ground in the last ten years. Now it is only a part of the wider science of Agriculture or Agronomics, and is so regarded in France, Germany, and the United States. The agricultural interests of Canada are daily assuming such importance, it is questionable if it is within the province of any single University to adequately provide for them.

The Governors of the University have never had a wider question before them. Even if they should decide to establish the Veterinary Faculty upon a new basis, with full and complete courses in the anatomy of the domestic animals, the principles of medicine and veterinary medicine, the principles of surgery and veterinary surgery, pharmacology, general and comparative pathology, bacteriology of infectious

diseases peculiar to domestic animals, parasitology, principles of breeding and veterinary obstetrics the diseases of the dog, and farriery, there yet remains for consideration the analysis of soils, the estimation of the food values of different crops, the exhaustion of the soil, the diseases of plants and trees, the bacteriology of milk and milk products, and all the problems connected with the earth that so closely touch the life of the people. These problems must be faced some day in this country; the cultivation of the soil, forestry, drainage, the breeding of cattle and the production of fruit cannot go on forever in the present haphazard fashion.

To solve these questions will require all the resources of intelligence and means possessed by the University and by the Government as well, and by his resignation Dr. McEachran has advanced the situation by revealing these problems in their clearness and simplicity. Things cannot continue as they are. Both Faculties are resolved upon that. They have conferred together and amongst themselves, and with the Principal, and all are agreed that the salvation of the school is bound up with the welfare of the country, and that, by a closer association of the purely scientific with agricultural interests. In the meantime, however, the teaching must lapse.

CEREAL "HEALTH FOODS."

Whatever justification there may be for throwing physic to the dogs, there is a literal reason for taking this radical measure with most of the advertised cereal foods. The movement in favour of these coarse foods began in America in the early forties under the influence of the "Return to Nature" cry, taken up by the Transcendentalists, so called, because what they said transcended the limits of sound sense. Graham advocated the virtues of unbolted flour, and Alcott proclaimed the regeneration of the world, through what Carlyle termed the "Gospel of Potatoes."

None of the cereal foods advertised to-day are as valuable as "Graham flour;" some of them are even more revolting to taste or sight; none are any better than the familiar bread of wheat, barley, or maize, or the long despised porridge, which is now become the main foundation of the American breakfast. The only difference is in the price. Any housekeeper knows the value of these humble breadstuffs, yet she will pay 20 cents a pound for Grape-Nuts, Shredded Wheat Biscuit, Ralston Health Club Breakfast Food, Wheatena, Vitos, Germea, Petti-john's Breakfast Food, H-O Oatmeal, Mazama or Force.

The late Sir James Fitzjames Stephen long ago made the observation,

that you cannot infer from the statement of a fact to the truth of the statement, but in the minds of many, a printed falsehood has equal authority with the spoken truth. Grape-Nuts is called Grape-Nuts because it has nothing to do either with grapes or nuts. "Four heaping teaspoons of Grape-Nuts are sufficient for the average meal;" four heaping teaspoonfuls of Grape-Nuts weigh one ounce and equal .007 pounds of protein, of a fuel value of 117 calories. A full grown man requires for one meal .09 pounds of protein with a fuel value of 1175 calories. One pound of Grape-Nuts is equal to 1870 calories, one pound of oatmeal equals 1965, one pound of meat with bone represents 1405 calories. It is quite true that a part of the starch is changed to dextrin and grape sugar, but there is no reason for thinking it of greater food value than an equal amount of oatmeal or flour.

Shredded Wheat Biscuit, again, is merely an excellent bread of winter wheat, costing 20 cents a pound. Ralston Breakfast Food claims to be nothing more than a perfect food made from selected wheat, rich in gluten; even this small claim is not established, for it appears to be made of a soft winter wheat, as it only carries 10.7 percent of gluten. Vitos does not agree with the analysis it bears; it claims only 6.68 percent of water, in reality it has nine and a half. Up to this point no great amount of mischief has been done, save the general disturbance that arises from the propagation of scientific untruth. Indeed there is this to be said in favour of many of these foods, that being consumed mostly by idle women impressed by the claims of their high nutritive value in concentrated form, they offer no such temptation to overeating as is always a danger in the case of the succulent and palatable if homely porridge. But when we come to consider the gluten preparations, we are face to face with a real evil. They are advertised as free from starch, whilst in reality they contain only a little less of carbohydrates than ordinary flour.

"Truly," as Swift observed, "when I consider that natural disposition in many men to lie, and in multitudes to believe, I have been perplexed what to do with that maxim, so frequent in everybody's mouth, that truth will at last prevail." Certainly truth has not yet begun to prevail in that sphere of human activity which has to do with the supply of cereal foods.

PROPRIETARY PREPARATIONS.

The Medical Profession is face to face with a grave problem; that is, what shall be our attitude towards proprietary preparations. We have been "circularized," we have been overwhelmed with "literature," we have been patiently waited upon by "representatives," of this firm and

of that. At first the letters were opened and diligently read, then they were set aside unopened, with ostentatious carefulness, for future reference; yet with the secret hope that the office boy or the housemaid might of their own motion take upon themselves the unwilling sacrifice. These humble persons would be sinning in ignorance; we should incur the risk of despising knowledge. Few, even yet, have the hardihood to cast this burden of the post into the basket; indeed there is much to be said against this practice, for it has lead in careless hands to the destruction of stamped envelopes, invoices, bills and other documents of commercial value.

The great objection to this rough procedure is that much, that comes to us, is good; and it is a safe prediction that proprietary preparations will increase rather than diminish, and that they will have a wider though legitimate usefulness. When we have occasion to prescribe Sulphate of Iron and Carbonate of Potassium combined with Myrrh, Sugar, Spirits of Nutmeg and Rose Water, we write down "Mistura Griffiths;" if we desire Protosulphate of Iron and Carbonate of Potassium, we prescribe "Pil Blaud;" if Arsenious Acid and Carbonate of Potassium be desired, we order "Liq. Fowleri," which is not very good Latin, but it is very good sense. One might extend the list to "Easton's Syrup," "Parrish's Food," "Hutchinson's Pills," and "Seiler's Tablets," yet many of these are advertised by the departmental stores at so much a hundred, or so much the ounce.

The solution of this problem rests jointly with us and the manufacturers. There are firms, whose products we habitually employ, with perfect security that we shall have what we ask, and that our names shall not be heralded abroad to our confusion and shame. There are firms on the other hand whose products we may desire, and yet to mention their names in the most secret prescription or in the most casual way in an article, would expose us to humiliation and evil speaking. The profession is beginning to understand the distinction between these classes, and when the firms in question come to realize that they are not trusted, they will either mend their ways or entirely abandon the attempt to introduce their products through legitimate channels. Then both parties will know where they stand.

The remedy that is urged upon students and practitioners, in season and out of season, is to write out their own prescriptions in good Latin and send them to the druggist at the next corner. It has been held of old time that the Latin has some occult virtue, especially if preceded by the mystic R with the cross upon the tail, a remnant of the invocation to Jupiter to look benignantly upon our efforts. There may be something to be said for that view of the case, but certainly we do not get

much assistance from the druggist. There is on the face of it no reason why our neighbor should be more conscientious than the far away firm, which sends its "representatives" to us, which "circularizes" us and overwhelms us with "literature."

The Inland Revenue Department in Bulletin No. 60 issues a report of the analysis of 15 samples of Tincture of Opium, obtained from 15 druggists. Of these, 14 were prepared by the druggists themselves, and one by an outside firm, but only four samples were genuine. Some were too strong in alcohol or opium; five were deficient in opium and in one case the deficiency amounted to fifty percent. The analysis of Citrate of Iron and Quinine gave similar results, less than half the samples being unadulterated. There is abundant evidence that the same laxity prevails in the preparation of other ingredients called for in prescriptions.

In Bulletin No. 34 issued by the Inland Revenue Department, there are analyses of Compound Tincture of Gentian, of Cardamons, Camphor, Myrrh, Rhubarb, Calumba, Ginger, Squills, Jalap, Arnica and Buchu. Of 23 samples of Tincture of Gentian, 9 were adulterated; of 11 samples of Tincture of Cardamons 5 were adulterated; of Camphor 2 out of 6; of Myrrh 5 out of 17; of Rhubarb 14 out of 21; of Calumba one-third; of Ginger 4 out of 7; of Squills 4 out of 6; of Jalap one-fourth the samples; of Buchu every one.

Carrying the research further, into Spirits of Nitrous Ether, and Dilute Hydrocyanic Acid, the official analysts found the same results. Only one sample out of nine of the former was found correct, some had no nitrous ether and several others were practically useless. The Inland Revenue Department has also gone into the matter of effervescent Sodium Phosphate at great length, in Bulletin No. 77. This preparation is somewhat new, being mentioned for the first time in the British Pharmacopœia of 1898; it does not occur at all in the United States Pharmacopœia. The prescription calls for 50 parts each of Sodium Phosphate and Sodium Bicarbonate, 27 parts of Tartaric Acid and 18 of Citric Acid. Apart from the difficulties of dehydrating the crystals, it is certain there is an interaction between the free acids and the Carbonate of Soda, whilst the preparation is kept in stock, which leads to deterioration with an excess of phosphoric acid. The Government chemists analyzed 64 samples, and only 13 were found to be genuine. The samples were purchased in nineteen cities and towns in Canada, and included all the preparations commonly offered for sale. Nearly all were below the standard in Sodium Phosphate, some were carelessly compounded, some adulterated with Magnesium Sulphate, and many deteriorated by age.

The matter of Beef Extracts is more serious. The public does not fully understand that these preparations are not foods. The originator of them, Baron Liebig, correctly assigned them to the class of stimulants, of which tea and coffee are the types. They have in addition the quality of a condiment, described by König under the term "Genusmittel," as a substance capable of aiding digestion. With the increasing public knowledge the manufacturers have been obliged to abandon the "Liquid Life" theory, and they have added articles of known food value, comminuted fibrin and other proteids, in some cases claiming that these have been predigested into peptones. There is reason for thinking that the bases of all these extracts are creatinin and urca, but in the present state of knowledge, he would be a rash man who should introduce into a system, already overburdened and embarrassed, a substance like urea, as a therapeutic measure. If predigestion of food were a process of any value at all, we should certainly look for its good effect in debilitated infants, and any one, who has to endure the chagrin of seeing foundlings fade away before his eyes, will readily appreciate the valuelessness of the whole series of "peptones," in that field of practice at least. These flesh bases represent one stage in the process by which complex nitrogen compounds are changed to simple ones, but we shall not be able to assign their real value to them, until the essential nature of the process called digestion is disclosed.

Frankly, we cannot do without the products of the manufacturers; we can and shall do without the products—good or bad—of those firms which push their wares with undue zeal. If they wish to adopt a suggestion, it would be, to take to heart the wisdom of hastening slowly. At any rate it will be the business of this Journal to lay before the profession from time to time such facts as will help them to avoid products, which are not genuine, and entanglement with firms, which are not to be depended upon for reticence.

MEDICAL ADVERTISING.

The proper procedure in writing an editorial article, is to commence as far away from the subject as possible. This canon of criticism will be sufficiently observed by saying that there is no evil without a remedy, an observation far enough away, when the subject under discussion is the abuse of medical advertising.

An average newspaper in these days is very little more than an advertising circular of patent medicines. By actual measurement of its columns one leading Canadian journal abandons 20 percent of its total space to this form of literature. In one issue of fifty-six columns there

were eleven and one-third columns of medical advertisements, in one of ninety-six columns there were fourteen, in another of one hundred and sixty columns there were by actual count thirty-two columns of this pernicious stuff.

It is not necessary here to dwell upon the nature of the claims, so publicly made, nor to insist upon the falseness of them; they carry no weight in normal minds, but the minds of persons to whom they are addressed are not even in a condition of normal ignorance. The advertisers take advantage of the psychological condition of the real or imaginary sufferer; they hold out one last hope to those whom the profession in all honesty has abandoned to die, and make high promises to those who have preferred to suffer in secret rather than seek the ordinary methods of cure. One who publishes these untruths is, in the Scriptural phrase, like him who letteth out water; he cannot foresee the evil consequences of his act, he does not care what heart will be made faint, when that last hope is dispelled, which was falsely raised.

It has long since become impossible to allow any but a very few newspapers in the hands of children; it is now almost impossible for a man to read his paper at the breakfast table, filled as that paper is with the loathsome details of catarrhs and coughs and running sores.

It is not enough to say that a man is not compelled to read this tissue of untruth; he cannot avoid it, and if he be ill and has exhausted all legitimate means of cure, he is very apt to abandon the old physicians for the new quacks, to his own hurt. If the progress of medicine were correctly indicated by these advertisements this would be a truly marvellous age. During the past year the blind have been made to see, the deaf to hear, the lame to walk, after bloodless operations; if only these miracle-workers could be made to cast out the evil spirit of untruth from their own hearts, that would be a fairly marvellous feat.

A person suffering from a "tired feeling" is stimulated with a tonic wine containing alcohol and cocaine; another has his catarrh dried up by morphine; constipation is cured with senna under the guise of some fanciful syrup, and children are soothed into a lethal slumber by some preparation of opium. It is no wonder then that the victims are ready to adduce sworn testimony that they cannot get along without their favorite medicine; any drunkard or morphinomaniac will attest to as much. Even when the evil has not proceeded so far, the system is dulled to the beneficent action of these drugs, against the time it may be necessary to have legitimate resort to them.

It is no small matter to break down the boundary between truth and falsehood, and when one has read the affidavits in support of statements that cannot be true, he is inclined to doubt the dictum of the

late Sir Francis Johnston, that a statement is not necessarily false because it is sworn to. Most of these affidavits are obtained when the victim is under the influence of benumbing drugs, or by a threat that they will be withheld from the sufferer, who has been brought to rely upon them as a relief from his pain.

There is no law against publishing false statements; there is a law against publishing obscene statements, and many of the advertisements in newspapers come within the legal definition;—"an obscene publication, whether true or false, which tends to deprave or corrupt." Article 179 of the Criminal Code expressly deals with the exhibition of disgusting objects, and with the advertising of drugs to be used for immoral purposes. No new law is required to prevent the sale of poisons. The whole matter is adequately covered by Section 4034 of the Revised Statutes; the poisons are specifically mentioned in the schedule, and many of these are sold openly in defiance of the law by the vendors of Patent Medicines.

MEANINGLESS EXPERIMENTS.

There is of necessity a great deal of experimental work in Medicine the results of which for the present are wholly meaningless, particularly in association with diseases of metabolism, whose nature is obscure. The Journals are full of crude accounts of unfinished work, of results having a bearing upon nothing, of predictions suggestive of absurdity. It is this makes the antivivisectionists to rage against us. The British Medical Journal has completed two series of correspondence upon the *transfusion of fluid, and the transplantation of pancreas in Diabetes*. The latter operation is a fair type of meaningless experiment. Even in a Medical Journal there is place for reticence in the face of the mystery surrounding all disorders of Metabolism, and it is hard to see what good is to be accomplished by Dr. Allan's relation of how he had transplanted the pancreas of a cat, and how all three, cat, pancreas and patient were the worse for it. It would appear Dr. Allan desired the pancreas of a sheep, but the surgeon who was brought in to perform the operation "considered it impracticable," on what grounds we do not know. The patient's condition we are told was not satisfactory at the time of operation, and after it, there were symptoms which gave rise to uneasiness. That, one can readily believe, but at any rate the pancreas sloughed out, which is probably the best thing that could have happened, though it scarcely required experimental evidence to demonstrate the event, nor any great profundity of pathological learning to foresee it. Dr. Allan had previously fortified his position by taking

counsel with the subscribers of the Journal, and as it appears from his letter that he has other surgical procedures in view, it might do no harm to urge him to modify his zeal, till a surer foundation is obtained in patient quiet experiments upon animals lower in the scale than the inmates of the Glasgow Infirmary.

For the transfusion of solutions there may be proper occasions, when it is required to raise the blood pressure during or after operations; to increase the multiplication of the erythrocytes after haemorrhage, or to diminish the intensity of poisons. The employment of this procedure in essentially mortal conditions is only to prolong the agonal period and minister to curiosity. There may of course be occasions when it is desirable to rouse a patient from his lethal stupor, for the sake of making a will or for performing some other legal act; but apart from this it is a matter requiring some deliberation, for nothing is gained to the patient, his friends, or the sum of knowledge by attempting to prolong the stage of mortality, stimulating the organism to an appearance of vitality, without any useful performance of its functions.

RURAL QUARANTINE.

A constable of a country town may be an excellent citizen and a zealous officer, and yet be ill instructed in the principles of Sanitary Science. There has been a mild outbreak of smallpox in the little village of Thorburn, Nova Scotia, and the people of the neighboring town of New Glasgow were resolute to have none of it. To that end they established a cordon around their homes and suspended all communication with their neighbours. A colored resident of Thorburn whose mind was inflamed with desire of a daughter of New Glasgow, evaded the quarantine and entered the forbidden city by stealth. He was discovered by the constable, who framed the resolution, "though that his joy be joy, to throw such vexation on't, as it may lose some colour." The Moor was apprehended and secured in the police station. The health committee was convened and instructions given that he should be "fumigated."

The official proceeded to carry out his orders in heroic fashion. He compelled his prisoner to undress, he lighted a fire in a stove and upon it placed a liberal supply of sulphur. The victim was then instructed to hold his clothes over the glowing mass, that the fumes might "enter." By this time the official found the atmosphere uncomfortable and retired, leaving the negro to his fate, and locked the door. Presently he was attracted by "shouting within" but he looked upon it as a manifestation of rebellion against the duly constituted health

authority of New Glasgow. All sounds soon ceased, and that was taken as evidence that the prisoner had been reduced to reason and that the work of purification was accomplished. The door was opened and the form of this rebellious spirit was seen "wrapt in mephitic vapours," the spirit itself hovering upon departure.

The assistance of the medical adviser of the board was obtained in time, and the spirit was persuaded to reinhabit its dark tenement. Whatever may be said of the methods of the New Glasgow Board of Health, the fame of their practice in this case spread through the surrounding districts and they have as yet kept their precincts free from the invasion of smallpox.

HOSPITALS FOR CONTAGIOUS DISEASES.

The facilities for caring for cases of contagious diseases in Montreal have always been deficient, and of late years they have been growing worse rather than better. At the present moment the only place for treatment and isolation is in the Civic Hospital on Moreau Street in a building which gained notoriety as the old smallpox hospital. Physicians and the public have long been alive to the necessities for better things; they have discussed, planned and protested, till at length a solution has been found.

Within the past month, the Mayor, as official head of the Corporation of the City of Montreal, has entered into an agreement with the Corporation of the Notre Dame Hospital to erect a contagious diseases hospital to care for patients of the Catholic faith; a similar agreement has been made jointly with the Montreal General Hospital, the Royal Victoria, and the Western, to deal with the remainder of the community. Under these agreements two separate institutions are to be founded; each will receive \$15,000 a year from the city and in return each will provide accommodation for 20 patients daily, equal to 7,300 nursing days. Patients in excess of these numbers will be paid for at the rate of one dollar a day. Both of these hospitals, it is expected, will be ready for occupation one year from this date.

The modern history of the contagious diseases hospitals dates back to August, 1900, when a quarterly meeting of the Board of Governors of the Montreal General Hospital was held and received a resolution from the Medical Board that such a hospital was urgently needed, and recommending a renewal of the arrangement that had once existed with the city. The Governors adopted this advice, on the ground that the then existing Civic Hospital did not receive the confidence of the public. On October 10th a meeting was held of representatives of the

Montreal General, the Royal Victoria and the Notre Dame Hospitals, to discuss grievances against the Civic Hospital and to urge joint control by those institutions. The result of this meeting was a resolution asking the City to build a hospital and to put it under experienced control, the sum necessary to be raised by a special loan. On December 3rd, another meeting was held at the City Hall, and Mr. H. B. Ames outlined the new project, the control to lie with the City Council, though there would be representatives from the English and French Hospitals. This led to a conference of citizens a few days later at which a wide difference of opinion was revealed. Some preferred civic control; those with less faith in the infallibility of the Council advocated management by a committee of citizens; some were in favour of one hospital for both nationalities; some were in favour of two with dual control.

In the meantime a crusade was being carried on against the old Civic Hospital on Moreau Street. There was abundant evidence that it was a disgrace to the city, that there was a lack of medical attendance and of nursing, that in short the hospital was worse than a gaol, inasmuch as in a purely penal institution one is not in danger of his life from the contagion of disease. It was a matter of common knowledge that patients who went to the hospital ill of Measles, contracted Scarlet Fever and died of the more recently acquired disease. Under the influence of these facts some progress was made and in January, 1901, a bylaw was drafted for submission to a vote of real-estate proprietors. Under the terms of this proposal the City was to erect, maintain and control the Hospital with a minority representation from the outside; but a Medical Board appointed by the old Hospitals was to have charge of the internal affairs. This plan received general support and was officially commended by the Provincial Board of Health, though there was a doubt in the minds of many as to the capacity of the City Council for efficient management of any public institution of any kind.

In January, 1901, an outbreak of Scarlet Fever in Montreal brought out in a very clear light the utter inadequacy of the existing facilities. There were five hundred cases requiring isolation at one time, while there was accommodation for not more than twenty. The newspapers of that time are filled with accounts of what patients had to endure, which read very like the history of pest-houses in mediæval times. The medical profession did its part in calling public attention to the necessity for better facilities, by letters and interviews in the newspapers, by private remonstrance with the Aldermen and by public statements.

On the 23rd January, 1901, the City Council received a communication from Sister Filiatrault, whose official title, *Supérieure Générale*,

Hôpital Générale, gave it considerable weight. Under this offer, this Lady undertook on behalf of the *Sœurs Grises* to contribute \$50,000 for a hospital for Catholics, on condition that the City should contribute a like amount and give a site for the building, as well as an annual subvention of \$10,000. A week later the Montreal General Hospital and the Royal Victoria through their Presidents made a similar offer in respect of the non-Catholic portion of the community.

It now looked as if the matter were settled on the dual basis, but the Health Committee was loth to abandon the civic hospital scheme controlled by the City. The question was soon put at rest by a letter from His Grace Mgr. Bruchesi, the Archbishop, dated 6th March, 1901, in which he laid down the principle that the only plan tolerable to Catholics was a separate hospital under their own entire management.

A new Council was elected in February, 1902, which took the matter up again, with the result that a single civic hospital with no religious leaning was again agreed upon. The Archbishop summoned the city clergy and put into their hands an ultimatum which was read after High Mass on April 16th. It contained the sentence: "and if we are not granted separate civic hospitals, I shall forbid the faithful under my care to enter the neutral one." Meantime the bylaw for submission to the ratepayers was set aside, and a minor controversy rose and fell about alienating any part of the public parks for a hospital site, but once the principle of two hospitals was established the rest was easy, and contracts have just been signed providing for their erection as has been stated.

The hospitals to be erected by Notre Dame for Catholics will be built below Sherbrooke Street, between Maissonneuve and Plessis, on a site covering 60,000 feet. It will be on the pavilion system, with separate buildings for cases of Diphtheria, Measles, Scarlet Fever and doubtful cases. These buildings will be entirely isolated or connected by corridors or tunnels, probably the latter. The plans are now in the hands of Marchand and Haskell, and the cost will be upwards of \$100,000. The money is all in hand, having been secured from the *Credit Foncier* of Canada, partly upon mortgage, and partly secured by a transference of the city subsidy. The material of construction will be iron and brick, with stone trimmings, erected on the "slow-burning" principle.

The new hospital will be an integral part of Notre Dame under the same management. The physicians will be nominated by the Medical Board and appointed by the Board of Governors; the nursing will be in charge of the *Sœurs Grises*, with the assistance of the nurses in

training, and Dr. E. B. Lachapelle will be the General Superintendent of the whole institution.

On the part of the English Hospitals, it is proposed to apply to the Legislature at Quebec for a charter of incorporation for a new hospital to be called the "Alexandra Hospital," which should have a Governing Board of fifteen members, to be composed as follows: the President and three members of the Montreal General Hospital, the President and three members of the Royal Victoria Hospital, and the President and two members of the Western Hospital, making eleven ex-officio Governors. Of the remaining four, two are to be elected by Subscribers of one thousand dollars and upwards, and two by Subscribers of one hundred dollars and ten dollars annually.

At a Meeting held in the Board Room of the Montreal General Hospital on the 17th March last, the Montreal General Hospital was represented by Mr. J. Crathern, President, Mr. J. R. Wilson and Dr. R. Craik; the Royal Victoria Hospital by Mr. R. B. Angus, President, Mr. E. S. Clouston, Hon. George A. Drummond and Dr. James Stewart, and the Western Hospital by Mr. C. F. Smith, President, Lt.-Col. J. H. Burland and Dr. F. W. Campbell. The Hon. Mr. Drummond was elected President, Mr. Clouston Honorary Treasurer, and Mr. J. J. Robson was appointed Secretary.

At this Meeting, it was decided to make an appeal to the English-speaking citizens of Montreal for funds sufficient to build and equip the hospital, as it was thought that the fifteen thousand dollars per annum would not be more than sufficient to carry on the regular work in an efficient manner, and the Governors are now appealing for assistance, not so much because it is a work of charity, as an urgent and greatly needed measure of public and personal safety, affecting rich and poor alike. Sir Wm. Macdonald has headed the subscription list with ten thousand dollars, and the Governors hope that every family will contribute something, no matter how small it may be, in order that there may be an Infectious hospital of such a character as will command the confidence of the whole community. It is understood that a number of private wards will be provided where patients can go and be attended to by their own physician.

The Governors are now endeavoring to find a suitable site for the Hospital. In this, they are experiencing more difficulty than the Notre Dame, because in the eastern portion of the city there are large tracts of vacant land, whereas, in the western section, most of the land is built upon and is of very much greater value. A contract was made for the purchase of a piece of land bounded by Mount Royal

Avenue, Esplanade Avenue and St. Urban Street, which would have been a most suitable site, being but a few yards from the two houses which are at present used for the isolation of infectious cases, but as soon as the proprietor found out the purpose for which the land was required he repudiated the contract and the Governors have now to look for another site.

As soon as the site is obtained, plans will be prepared and the work of construction pushed forward with all possible despatch.

MEDICAL NEWS.

A fine new hospital has just been opened at Glace Bay, Cape Breton, known as St. Joseph's Hospital, and is said to be a very comfortable and well appointed institution. It offers accommodation for 48 public and 10 private patients. The building, which is situated to command a magnificent combination of land and water scenery, has been erected by private philanthropy at a cost of about \$25,000.

The Convocation of the Medical Faculty of Queen's University, Kingston, was held on the 9th of April for the purpose of conferring degrees. The Chancellor, Sir Sanford Fleming, presided, and delivered a brief address. The graduates were "laureated," as a local paper observes, and the valedictory address was given by J. L. McDowell. Fifty-one students wrote in the examinations and forty were successful. The medallists were A. H. Leonard, Kingston, in Surgery, and W. S. Murphy, Portland, in Medicine.

The Thirty-Second Annual Convocation of the University of Bishop's College for conferring degrees in the Medical Faculty, was held in the Synod Hall on Friday 24th April. The graduates were James Franckum, W. W. Kelly, F. Richards, W. H. White, D. W. Morison.

Wood gold medal—James Franckum, for best aggregate in all examinations, also Nelson gold medal, for best examination in Surgery. Chancellor's prize—William W. Kelly, for best examination in final branches. David silver medal—G. G. Armitage, for best examination in primary branches. Anatomy prize, second year—Frederick W. Aris. Anatomy prize, first year—Samuel Ship and Stanley L. Lucas.

Rev. Principal Whitney presided. The Dean, Dr. F. W. Campbell, addressed the Convocation; the valedictory address was delivered by Dr. W. W. Kelly and Dr. Reilly replied on behalf of the Faculty. The degree of D.C.L. was conferred upon Dr. Casey Wood of Chicago and seven graduates in Dentistry received their degrees.

During the present session of the Nova Scotia Legislature the annual reports of various provincial charities have, as usual, been presented. One of these reports is that of the Victoria General Hospital at Halifax, an institution which enjoys the somewhat unusual distinction of being supported entirely by the public treasury. This hospital has accommodation for about 160 patients, and has within recent years been advanced to a very high state of efficiency under the superintendence of Mr. W. W. Kenney. A total number of 1669 patients received treatment during the year, a number which would have been larger had it not been necessary to quarantine the institution for some weeks on account of the unfortunate development of a case of small-pox in one of the wards early in the year. The expenditure was \$57,556. It is the intention of the Government to make substantial improvements to the hospital during the present year, for which purpose a sum of about \$20,000 has been voted in addition to the usual appropriation for ordinary expenditure.

There is a number of general hospitals in Nova Scotia, all, however, being much smaller than the Victoria General Hospital. They receive a grant from the provincial treasury, which during the present session of legislature has been fixed at 30 cents per patient per day, providing the sum given to any one hospital does not exceed \$1,500 a year. One of the best known of these smaller institutions is the Aberdeen Hospital, at New Glasgow, a manufacturing town, where are situated the smelting furnaces and rolling mills of the Nova Scotia Steel and Coal Co., the extensive works of the Matheson Foundry Co., and numerous other ironworking industries. It is therefore a town in which accidents are common, and some very excellent surgical work has been done in the Aberdeen Hospital. The Brookland Hospital, at Sydney, is another institution at which some excellent surgical work is done. This hospital was built by the Dominion Iron & Steel Co., especially for the benefit of its sick and injured employees, but none are refused admission. The hospital at present can accommodate 22 patients, but when completed will be able to receive nearly double that number.

The report of the Nova Scotia Hospital, an institution devoted entirely to the treatment of the insane, shows that 155 patients were admitted during the year, and that a total number of 551 were under treatment; 160 patients were discharged, of whom 74 were regarded as being cured. This is equivalent to 47.6% of the admissions. Among the improvements reported is the completion of a fine new building

containing an associate dining room capable of accommodating 300 patients, and a nicely appointed recreation hall. The expenditure for the year was \$82,576. This hospital is supposed to receive only those cases of insanity which offer a fair prospect for cure, or which are, for any reason, unsuited to the care of a county asylum. Chronic "harmless" cases are cared for in the various county asylums, all of which are subject to rigid inspection by the Government inspector of humane and penal institutions. At present this position is held by Dr. George L. Sinclair, who is an exceptionally capable officer, and untiring in his efforts to improve the standard of care given to the defective and criminal classes in Nova Scotia. Dr. W. H. Hattie, (McGill '91), is Superintendent.

The event of greatest concern to the Medical Profession of Nova Scotia within recent months is the death of Dr. Andrew Halliday, which occurred at Halifax on the tenth day of March. Dr. Halliday was a graduate of the University of Glasgow, and a young man of great promise. Earnestly devoted to his profession, and enthusiastically fond of the scientific branches of medicine, he was a diligent and thoughtful student. For a number of years he practiced in a country town, where he maintained a small laboratory in which he did some excellent original work. His bent being for laboratory work he accepted the directorate of the laboratory of the Provincial Board of Health scarcely a year and a half ago, and was afterwards elected Associate Professor of Pathology at the Halifax Medical College. He also lectured on Zoology for some years at the Dalhousie University. In all these positions his work was characterized by conscientious thoroughness, and he won the esteem and confidence not only of his students but of the whole profession throughout Nova Scotia. His death at the early age of thirty-six years is much regretted, and leaves a blank which will not easily be filled.

The Canadian Association for the Prevention of Tuberculosis held its Third Annual Meeting in Ottawa on the 15th April. The Montreal League was admitted to affiliation and Dr. Roddick presented a report showing that in many respects the organization in Montreal is more perfect, and the work carried on more systematically than in any other city in Canada. Dr. Bryce, Secretary of the Ontario Association, presented a report which stated that branches had been established in Guelph, London, Hamilton and St. Catharines in addition to the one in Toronto.

The following officers were elected:

Honorary President—His Excellency the Earl of Minto.

Honorary Vice-Presidents—Sir Wilfrid Laurier, Lord Strathcona, and the Lieutenant-Governors of the Provinces, the Northwest Territories and the Yukon.

President—Hon. Senator Edwards, Rockland.

Honorary Treasurer—Mr. J. M. Courtney, C. M. G.

Secretary-Treasurer and Organizer—Rev. Dr. Moore.

Executive Council, appointed by His Excellency, the Governor-General—Hon. Sidney Fisher, Ottawa; Hon. Wm. Templeman, Victoria; B. C.; Mr. R. L. Borden, M. P., Halifax, N. S.; Dr. T. G. Roddick, M. P., Montréal; Mr. C. B. Powell, M. L. A., Ottawa; Dr. H. B. Small, Ottawa; Dr. F. Montizambert, Director of Public Health; Prof. Robertson, Commissioner of Agriculture and Dairying; Dr. R. W. Powell, Ottawa; Mr. Geo. H. Perley, Ottawa. Elected by the Association—Sir Wm. Hingston, Montreal; Sir James Grant, Ottawa; A. W. Fleck, Ottawa; Dr. E. L. Lachapelle, Montreal; Dr. P. H. Bryce, Toronto; Dr. Fagan, Victoria, B. C.; Dr. E. J. Barrick, Toronto; Dr. G. Bell, Winnipeg; Mr. Sheriff Sweetland; The Archbishop of Ottawa.

The Montreal League has arranged with the Ministerial Association that addresses shall be delivered in the school rooms of all Protestant Churches by physicians on Sunday evening, 17th May. His Grace Mgr. Bruchesi has given his consent to a similar series of meetings in the Catholic Churches.

MEETINGS OF SOCIETIES.

The Congress of American Physicians and Surgeons will hold its Sixth Triennial Session in Washington, May 12th, 13th and 14th, 1903. This Congress is composed of members of the following National Medical Societies whose names, with those of their secretaries, are given.

American Ophthalmological Society—Secretary, S. B. St. John, M.D., 68 Pratt Street, Hartford, Conn.

American Otological Society—Secretary, Dr. Frederick I. Jack, 215 Beacon Street, Boston, Mass.

American Neurological Association—Secretary, Graeme M. Hammond, M.D., 60 W. 25th Street, New York City.

American Gynecological Society—Secretary, J. Riddle Goffe, M.D., 22 E. 35th Street, New York City.

American Dermatological Association—Secretary, Charles J. White, M.D., 259 Marlboro Street, Boston, Mass.

American Laryngological Association—Secretary, James E. Newcomb, M.D., 118 W. 69th Street, New York City.

American Surgical Association—Secretary, D. P. Allen, M.D., 278 Prospect Street, Cleveland, Ohio.

American Climatological Society—Secretary, Guy Hinsdale, M.D., 3942 Chestnut Street, Philadelphia, Pa.

Association of American Physicians—Secretary, Henry Hun, M.D., 149 Washington Avenue, Albany, N.Y.

American Association of Genito-Urinary Surgeons—Secretary, John Vander Poel, M.D., 36 W. 39th Street, New York City.

American Orthopedic Association—Secretary, John Ridlon, M.D., 103 State Street, Chicago, Ill.

American Physiological Society—Secretary, F. S. Lee, M.D., 202 W. 81st Street, New York City.

Association of American Anatomists—Secretary, G. C. Huber, M.D., Ann Arbor, Mich.

American Pediatric Society—Secretary, S. S. Adams, M.D., No. 1 Dupont Circle, Washington, D.C.

American Medico-Psychological Association—Secretary, C. B. Burr, M.D., Flint, Mich.

American Association of Pathologists and Bacteriologists—Secretary, H. C. Ernst, 688 Boylston Street, Boston, Mass.

The officers of the Congress are:

President—William W. Keen, M.D.

Vice-Presidents (ex-officio)—Presidents of constituent societies.

Secretary—William H. Carmalt, M.D., New Haven, Conn.

Treasurer—Newton M. Shaffer, M.D., New York City.

To enable a physician to become a member of the Congress, with a right to participate in its proceedings, it is necessary that he be a member of one of these constituent national societies, but a physician may be accredited as a visitor to the Congress by any one of the constituent societies. It has been arranged that members and their friends attending the Congress can secure from the passenger associations a railroad rate of one and one-third of first-class fare. This Congress is always attended by a large number of Canadian physicians.

The Fifty-Fourth Annual Meeting of the American Medical Association will be held in New Orleans, May 5th, 6th, 7th and 8th, and extraordinary preparations are being made in that charming city for the reception and entertainment of members. The origin of the American Medical Association dates back to 1846, when a convention of physicians from the various states was called at New York. This convention adjourned to meet at Philadelphia the following year, when the American Medical Association was organized, and it has been in exist-

ence ever since, holding a meeting each year, except two years during the Civil War. It has now a membership of over 13,000.

Special trains will be run from all the principal cities and a trip by water from New York and return is offered for the low rate of fifty dollars. The Editor-Secretary of the Association is Dr. George H. Simmons, 61 Market Street, Chicago.

The General Meeting of the Royal Society of Canada will be held in Ottawa during the week commencing May 18th.

The Thirty-Sixth Annual Meeting of the Canadian Medical Association will be held in London, Ontario, under the Presidency of Dr. Walter H. Moorhouse, on August 25, 26, 27 and 28. Dr. James Stewart, Professor of Medicine in McGill, will deliver the Address in Medicine; Dr. Alexander Hugh Ferguson, the Address in Surgery, and Dr. Matthew D. Mann, the Address in Gynaecology. The meeting was held in Montreal last year.

The Annual Meeting of the Ontario Medical Association will be held in Toronto, June 16th, 17th and 18th. Dr. J. C. Mitchell, Toronto, is the President, and Dr. H. C. Parsons, Bloor Street, W., Secretary. Papers and business are in charge of Dr. W. P. Caven, Toronto; entertainment and arrangements are in the hands of Dr. Bruce L. Riordan. This will be the first meeting of the Ontario Medical Association to last three days.

The American Congress on Tuberculosis will convene at St. Louis, Mo., July 18th, 1903. The object of the organization is to advance the science of prevention of tuberculosis. Dr. Daniel Lewis, of New York City, is President of the Congress, and the associate officers include many of the leading physicians of the country.

The Fourteenth International Congress of Medicine was convened in Madrid, Spain, during the week of April 23 to 30. A communication from the Secretary General invited the attendance and co-operation of all who were interested, and the programme showed all of the departments of general medicine, obstetrics and gynaecology to have been thoroughly represented. The Secretary of the American Committee was Dr. John H. Huddleston, No. 126 West 85th Street, New York City.

Reviews and Notices of Books.

DISEASES OF THE SKIN, THEIR DESCRIPTION, PATHOLOGY, DIAGNOSIS AND TREATMENT, With Special Reference to the Skin Eruptions of Childhood and an Analysis of Fifteen Thousand Cases of Skin Disease. By H. Radcliffe Crocker, M.D., (Lond.), F.R.C.P., Physician for Diseases of the Skin in University College Hospital, Etc., Etc. Third Edition With Four Plates and 112 Illustrations. London, H. K. Lewis; Philadelphia, P. Blakiston's Son & Co.; Canadian Agents, Chandler and Massey, Montreal and Toronto. Price, \$5.00.

The English edition of this well known work on skin diseases is issued in two volumes with the pages numbered consecutively and an index at the end of the second volume. Unfortunately there is nothing to denote whether the page referred to is in the first or second volume, and thus much of the advantage gained from having such a large work divided is lost. The American edition, on the other hand, makes one large volume of 1466 pages.

As Crocker's dermatology is so well known and has been already reviewed in these columns, there is no need here to give a detailed account of it. We may, however, point out some of the alterations and additions made in the present edition. The names of some of the less common diseases the author has thought wise to change to what we have always looked upon as those most favoured by American dermatologists. Thus "Hydroa herpetiformis" now is named "Dermatitis herpetiformis." Lichen ruber and pityriasis rubra pilaris are, we think, properly classed together as "Lichen acuminatus," a term which avoids the confusion connected with the older names, brought about by the divergence of opinion concerning the identity or otherwise of the two conditions. Crocker holds that the two are undoubtedly identical, and gives as most convincing evidence the fact that a case shown at the Dermatological Congress in 1892 was claimed by both parties for their own disease. The list of new articles enumerates about forty different diseases; of these, however, the majority are rare affections of which only a few cases in all have been observed. Among those of interest as associated with recent discoveries in medical and kindred sciences are X-ray Dermatitis, Toxin Serum Eruptions, and Blastomycosis Hominis. It is strange that no case of the last named disease has as yet been recognized in England, although Curtis has found it on the continent of Europe. Crocker's description is taken mainly from Gilchrist's work. While there are no plates, with the exception of one showing the principal syphilides and another of the ring-worm fungi,

the author has indicated where the best plates illustrative of the respective diseases are to be found, his own Atlas naturally being the principal one referred to. There are, however, numerous illustrations in the text of the microscopical anatomy of the various lesions. The references to works of other dermatologists are more valuable than usual on account of their being accompanied in most cases by a short foot-note explaining the purport of the article to which attention is directed. The author has added to the present edition an appendix on the staining of micro-organisms by Mr. George Pernet.

Altogether the new edition is a distinct improvement on the older ones and at the same time has not been made very much more cumbersome. It will no doubt have the success of the former editions and continue to rank as one of the best of English works on dermatology.

G. G. C.

PRACTICAL HANDBOOK OF THE PATHOLOGY OF THE SKIN, An Introduction to the Histology, Pathology and Bacteriology of the Skin, With Special Reference to Technique. By J. M. H. MacLeod, M.A., M.D., M.R.C.P., Assistant to the Dermatological Department, Charing Cross Hospital; Physician to the Skin Department, Victoria Hospital for Children. With 8 Coloured and 42 Black and White Plates. London, H. K. Lewis. Price, 15/ net.

Up to the appearance of the present work, anyone wishing to study the pathology of the skin, has been forced to obtain his information from the larger text-books on dermatology, and in only a few of these has the subject received the prominence which its importance demands. Feeling that to the student of dermatology, the need of a handbook dealing only with this part of the subject was evident, the author has given us here a systematically arranged treatise on the pathology of skin lesions, which, however, he modestly states, is more of the nature of an introduction than a complete manual upon the subject.

The first six chapters contain a description of the apparatus employed, and the methods of staining, mounting, section cutting, etc., in obtaining and preparing specimens for histological examination. The matter is gone into sufficiently in detail to allow an unskilled laboratory worker to follow the procedures recommended without difficulty. Such, indeed, may be said of all parts of the book dealing with technique.

The normal histology and embryology of the skin are next fully described, and then the author takes up in order the pathological changes found in the various layers of the epidermis and corium. A chapter each deals with the hair and hair follicles, sebaceous and sweat

glands, muscles, blood vessels, lymphatics, nerves, etc., while the last seven chapters are descriptive of the vegetable and animal parasitic diseases. The book is copiously illustrated with both coloured and black and white plates nearly all of which are the author's handiwork. That it represents all that the author claims for it and more is unquestionable and without doubt it will simplify and thus encourage the study of microscopical pathology in skin lesions, a part of the subject which is too often neglected by dermatologists, and the one through which we hope in the future to base a scientific classification of such diseases. We have much pleasure in recommending it to those interested in this branch of medicine.

G. G. C.

THE INTERNAL SECRETIONS AND THE PRINCIPLES OF MEDICINE BY CHARLES DE M. SAJOUS, M.D., Vol. I. \$6.00. Philadelphia, F. A. Davis Co.

A critic is always right in cases where it does not matter whether he is right or wrong; but in the hundredth case, he is sure to be wrong, because, when an author leaves the beaten track, the critic presumes he has lost his way, as the critic himself would be sure to do. This large book by Dr. Sajous looked at first like the hundredth case, and it required some investigation to make it clear that it is not a most important contribution to the sum of knowledge. It is a product of the library not of the laboratory; it is made up of opinions and statements gathered together with zeal and industry; but the only opinions that are of any value are those a man arrives at for himself, and they are valuable chiefly to himself. A great fabric has been reared of very flimsy material on a very small foundation, and it is easy to guess what will happen when it is blown upon by the Spirit of the Laboratory. Of course, a great deal of what Dr. Sajous says may be perfectly true, but one would like better evidence of it than is contained in this book.

This volume deals chiefly with the physiology and pathology of the ductless-glands, and proceeds upon the assumption that their functions are sufficiently similar in all vertebrates to warrant the use of data obtained in the lower animals in the study of the corresponding organs in man. The secretion of the adrenals, it is claimed, has been traced to the pulmonary alveoli, and there holds in combination the constituents of hæmoglobin, endowing them and the plasma with their affinity for oxygen. This secretion, it is held, and not the red corpuscles, carries on all the oxidation processes, and therefore such conditions as hæmoglobinuria, methæmoglobinuria, and hæmatoporphyrinuria indicate successive stages of hæmoglobin dissociation, incident upon adrenal insufficiency.

Next, the author strives to show that the adrenals are directly connected with the *anterior pituitary body* through the solar plexus, the splanchnic nerves, and the cervico-thoracic ganglia of the sympathetic, and that this diminutive organ, formerly thought to be the vestige of some aborted gland, is in reality the most important organ of the body, governing the adrenals, and therefore all the processes of oxidation. The corollary to all this is that the vital processes depend upon the functional efficiency of the pituitary body. The history of thought in connection with this body has been a chequered one. It was originally believed to be the source of the *pituita* or secretion which appears in the nose, and from that humble office it rose in dignity and later became the ultimate lair of the soul. This theory in turn was abandoned, and for a long time the pituitary body was degraded to the position of an aborted gland. It looks now as if there were better days in store for this despised remnant. Dr. Sajous makes the thyroid gland the handmaiden of this controlling organ, sustaining its efficiency by means of its secretion; excessive production of thyroid fluid causing overstimulation and exophthalmic goitre; reduced secretion causing myxœdema. But this is not all, for the author is led to conclude that what are now considered as symptoms of infection or poisoning are manifestations of overactivity or insufficiency of the adrenal system; and the physiological action of remedies also depends upon the anterior pituitary body. Cholera, arsenic poisoning, and phthisis thus find an easy solution in lowered functional activity of the adrenal system; but when a similar explanation is offered for the formation of glycogen and urea, for the protective processes in the intestinal canal and in the respiratory surfaces, for acromegaly, chlorosis, glycosuria, cancer, gout and the action of remedies, then we must part company with this fascinating author. If any one rises up to say that he knows what all these conditions mean, then we reply, that even if he does know, we shall not believe it.

[The following review is by a second hand].

The work recently issued by Dr. Charles E. J. M. Sajous,—on the "Internal Secretions and Principles of Medicine," is at once remarkable and unique. It is a book of 788 pages, a book which treats exhaustively of its subject, which shows both searching study and unflagging industry. That the statements therein contained are uncommonly sweeping need hardly be suggested to those who have read the book, and for the benefit of those who have not, we give a brief summary of the author's conclusions.

The physiological function of the internal secretions of the adrenals is loosely to combine with the atmospheric oxygen in the lungs,

and to endow the blood plasma with its oxidizing properties; the organic compound thus formed in the lungs is called adrenoxin. The anterior pituitary body governs the functional activity of the adrenals and is directly connected with these organs through the cervico-thoracic ganglia, the splanchnic nerves and the semilunar ganglia of the sympathetic system. The posterior pituitary body is the functional centre of the nervous system, and the anterior pituitary's co-centre in sustaining all vital processes. The efficiency of the anterior pituitary body is maintained through the iodine compounds which are secreted in the thyroid glands. The thyroid gland, the anterior pituitary body and the adrenals are functionally independent and constitute the Adrenal System, which has for its purpose to sustain physiological oxidation and the metabolic activity of all tissues. All general symptoms witnessed in disorders in which the blood is invaded by a poison of any kind are, in reality, manifestations of over activity, insufficiency, or inactivity of the Adrenals.

Neutrophile leucocytes form: (1) peptones, which combine with adrenoxin to sustain general metabolism, *i.e.*, the vital process; (2) myosinogen, which combines with adrenoxin to supply contractile energy to muscles; (3) fibrinogen, which combines with adrenoxin to supply heat and energy to the blood.

Eosinophile leucocytes form hemoglobin, which combines with adrenoxin and is contained in the erythrocytes. Basophile leucocytes form myelin, the active principle of which, lecithin, combines with adrenoxin to develop nervous energy. Trypsin, the active principle of the speno-pancreatic secretion, protects the organs from the effects of bacteria, their toxins and all toxic albuminoids, including vegetable poisons and venoms.

The author goes on to say that the principal ingredient of diphtheria antitoxin is trypsin. Pulmonary Tuberculosis is due to adrenal insufficiency; Syphilis is due to adrenal insufficiency, and Mercury is a powerful adrenal stimulant: Iodine is nature's own stimulant. Pneumonia, Fever, pallor, are all due to the same condition. In tetanus, epilepsy, hydrophobia, puerperal septicemia and kindred disorders, the adrenals should be stimulated. Baccelli and Pasteur have saved all their cases in this way and recently Dr. Barrows of New York saved his case of puerperal septicemia because his solution of formaldehyde was just strong enough to stimulate the adrenals. Thus claims Dr. Sajous of Philadelphia. Since 1889 he has been working steadily and conscientiously—to tell us to-day that the science of Medicine is simplicity itself: there are no more difficult problems. Diagnose your case, if you like—but what does it matter? Whether

it be tetanus or typhoid, diphtheria or septicemia, the leading principle is to stimulate the adrenals. Keep the hypophysis in good condition and take care that the thyroïdal iodine compounds are in abundance. In conclusion we take the liberty to state that the author—a man of very great ability—sees everything in the light of one idea, and thereby arrives at most remarkable conclusions. Much in the work is justified, many of the ideas are doubtless correct, but others are so extreme and have so little basis of fact that the work, as a whole, cannot be accepted in its entirety.

THE ANATOMY OF THE HUMAN PERITONEUM AND ABDOMINAL CAVITY, Considered From the Standpoint of Development and Comparative Anatomy. By George S. Huntington, M.A., M.D., Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York. Lea Brothers and Company, Philadelphia, 1903.

This very fine volume, superbly illustrated, and beautifully printed, is the work of a well known anatomist, who is President of the American Association of Anatomists. It represents part of the course in visceral anatomy, as developed during the past fourteen years at Columbia University. It commences with an account of the development of the vertebrate ovum and then especially describes the development of the alimentary canal and the peritoneum. The comparative anatomy of the foregut and stomach and of the peritoneum is then described with their development and also the development of the various organs connected with the alimentary canal such as the Liver, Pancreas and Spleen. A large portion of the book is devoted to comparative anatomy. There is a special part on the ilco-colic junction and connected structures in Vertebrates. The specialized morphological characters in Rodents and Ungulates are dwelt on. The best part of the book and the most useful is the part which treats of the morphology of the human cæcum and Vermiform appendix. This is magnificently illustrated and fully describes the various positions and anomalies of the appendix, and its peritoneal relations. Some examples are cited which show absence of the appendix; this is very rare and loss of the appendix from disease long past might be mistaken for this condition. The condition of floating cæcum and colon is much more common than the writer admits, and in our experience is much more common in females than males. Most of the examples in this work are taken from infants, in whom this arrangement is comparatively frequent.

There is much material in this work which is of great value, and it

has been collected with great care, and at the expense of much labour and time. The arrangement is rather complicated and somewhat too technical for general purposes. The various specimens illustrated are accurately described but rather too much space is devoted to them. The book is one which will be of much use as a work of reference and will be of value to anatomical specialists. It is a work which every public Medical library should possess, but it is rather too technical for the average man. It is provided with a good index. We congratulate the author on having produced such a handsome work, and one which gives evidence of so much research.

STUDIES FROM INSTITUTE FOR MEDICAL RESEARCH, FEDERATED MALAY STATES.

Dr. Hamilton Wright, Director of the Institute for Medical Research, Federated Malay States, has issued a report upon an inquiry, lasting two years, into the etiology and pathology of Beri-Beri, that strange disease which is the scourge of the East. The report in its method and fulness is a justification of the high hopes that were formed of Dr. Wright's capacity when he was Fellow in Pathology in McGill University. The results of the enquiry are dealt with in 547 distinct paragraphs, covering every aspect of the case with no waste of words. The evidence against the usual theories advanced to explain the causation of the disease would appear to be convincing. These theories in the main are: Gelpke's, that beri-beri is due to the use of dried fish, infected by a trichina; Miura's, that it is due to the ingestion of certain kinds of raw fish; Grimm's, that it is caused by infected fish; Takaki's, that the dietetic insufficiency of nitrogen is the cause; Ross' theory of arsenical poisoning; Glögner's, of a hæmic plasmodium. Other theories connect the disease with some factors having to do with rice food.

The evidence against these views is set forth conclusively and one is led to appreciate the weight of Dr. Wright's own conclusions that beri-beri is due to a specific organism that remains dormant in certain localities, but having gained entrance to the body by the mouth, multiplies locally in the stomach or duodenum, gives rise to a local lesion and produces a toxin that, gaining the general circulation, acts on the peripheral terminations of both afferent and efferent ordinary and vital neurones to cause a bilateral symmetrical atrophy, and that finally the organism escapes in the fæces to again lie dormant.

Dr. Wright has been unable to isolate the microorganism and he refers to this failure in the following cryptic saying: "I regret to say that in a country like this where it is not unusual to be brought to

bed with specific organisms of ill-understood diseases, I cannot contribute to the birth-rate." This lightness of speech does not arise naturally out of such serious work.

The matter is by no means settled. Outbreaks occur on board ships, where the latrines are well cared for, and such an outbreak has ceased when a new supply of rice was obtained. The disease has practically disappeared from the Japanese navy and army, under the influence, it is claimed, of a better diet with less rice. Yet in opposition to this is the experience in the Dublin Asylum, that is if the outbreak in that institution was really beri-beri. Many of the problems connected with the disease remain untouched, even in Dr. Wright's report, such as its prevalence during the rainy season, and its incidence upon the Chinese, but they will surely yield in time to such patient research.

BOOKS RECEIVED, NOTED OR RESERVED FOR LATER NOTICE.

F. A. Davis Company, Philadelphia.—The Internal Secretions and the Principles of Medicine. By Charles E. De M. Sajous, M.D. Vol. 1 1903.

D. Appleton and Company, New York and London.—The Surgical Diseases of the Genito-Urinary Organs. By E. L. Keyes, A.M., M.D., LL.D., and E. L. Keyes, Jun., A.B., M.D., Ph.D. 1903.

Materia Medica and Therapeutics, by Roberts Bartholow, M.D.

Obstetrics, by J. Whitridge Williams, M.D.

Surgery of the Head, by Bayard Holmes.

Lea Brothers and Company, Philadelphia and New York.—Progressive Medicine. Edited by Hobart Amory Hare, M.D. Vol. IV, Dec., 1902. Vol. I, March, 1903.

H. K. Lewis, London.—Practical Handbook of the Pathology of the Skin. By J. M. H. McLeod, M.A., M.D., M.R.C.P. 1903.

E. B. Treat and Company, New York.—Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. Carl von Noorden. Translated by Boardman Reed, M.D. Part I, Obesity; Part II, Nephritis; Part III, Membranous Catarrh of the Intestines. 1903.

The Year Book Publishers Chicago.—Gynaecology. By Emilius C. Dudley, M.D.

Kelly and Walsh, Singapore.—An Inquiry Into the Etiology and Pathology of Beri-Beri. By Hamilton Wright, M.D. (McGill), May, 1902.

RETROSPECT OF CURRENT LITERATURE.

Medicine.

UNDER THE CHARGE OF JAMES STEWART, F. G. FINLEY AND H. A. LAFLEUR.

Unilateral Renal Hæmaturia.

ESIXER, AUGUSTUS A., M.D. "Unilateral Renal Hæmaturia." *American Journal of the Medical Sciences*, April, 1903.

The writer enumerates the various known causes of hæmaturia, and alludes to the cases in which the cause is not ascertained and which have been called essential or idiopathic hæmaturia, hæmaturia without lesion, renal hæmophilia and various other synonyms. Such cases are becoming less frequent in proportion as careful anatomical study is undertaken. In some instances the symptoms have pointed to involvement of one kidney, and this has been proved by cystoscopy, ureteral catheterization, or cystotomy. Again relief of the symptom has occurred after various operations on the kidney—simple manipulation, nephropexy, nephrotomy, or nephrectomy. Sometimes the kidney has appeared normal, more often there has been some abnormality—displacement, obstruction of ureter, calculi, tuberculosis, neoplasm, or the lesions of chronic nephritis. In a case under the writer's care there were symptoms of renal calculus, with hæmaturia, in which, after the kidney was exposed, found apparently healthy, and left undisturbed, the symptoms disappeared permanently. A detailed review is given of forty-eight cases of similar or related character collected from various sources followed by titulation and analysis. Thirty-one cases were in females, sixteen in males. The preponderance in females is probably to be accounted for by the greater frequency of neurotic disorders, of displacements of the kidney, and of circulatory derangements due to constriction of the waist by clothing, or in disorders associated with pregnancy and lactation. The youngest patient was 18, the oldest 76, the average age being 36. The right kidney was involved in 25 cases, the left in 23. The clinical diagnosis most frequently made were calculus, neoplasm, or tuberculosis. The diagnosis is difficult, and can be made only by exclusion.

The unilateral character of the hæmaturia can be established by cystoscopic examination, ureteral catheterization, or direct inspection

of the areteral orifices after cystotomy. Various operative procedures were adopted in the cases cited. The preferable course, after trying medicinal and non-operative measures without success, consists in exposure of the kidney, with incision of the organ itself or its pelvis, or stripping of the capsule, and the removal of any local lesion, or the restoration of displaced organ. If the hæmaturia persist, nephrectomy may be performed. Recovery followed in 40 cases, death in 6, and recurrence of hæmaturia in 2. In 16 cases no lesion was found at the time of operation. Displacement was found in 6 cases, renal congestion in 3, adhesions of the kidney in 2, inflammatory, degenerative or other destructive lesions of the kidney in 11, alterations of the pelvis of the kidney in 9. It is not certain that there was no lesion in the 16 negative cases, as in almost all of these no histological examination of the kidney tissue was made. The hæmaturia, and its cessation after simple exposure, manipulation or incision of the kidney, are difficult to explain in many cases. An analogy may be drawn with the relief afforded by abdominal section in cases of tuberculous peritonitis, and by decortication in nephritis.

Conclusions.—There occurs occasionally, in men and women alike, mostly at middle adult life, hæmorrhage from a single kidney,—from either with equal frequency, in many instances in consequence of demonstrable organic disorder, and in the remainder of obscure and undetermined origin. This hæmaturia may cease after simple exposure of the kidney, or after nephropexy, or nephrotomy, or in the failure of these after nephrectomy. In a final note the writer adds two cases that have come to his notice since the article was written.

H. A. L.

Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

Twelve Cases of Malignant Disease Treated by the Roentgen Rays.

H. P. MOSELEY, M. D., *American Medicine*, January 31, 1903.

Both static and coil were used to excite the tube, which was placed as a rule from 15 to 30 c. m. from part treated. Exposure lasted from 5 to 10 minutes, and the frequency of treatment regulated by the effect produced. The most satisfactory tubes were found to be those giving out a large number of rays, which are not highly penetrating. Although high vacuum tubes produced more readily a reaction on healthy

skin, the curative effects were not as good as when low vacuum tubes were used.

The following summary of cases treated is of interest: Two cases of epithelioma of lip, one of six years duration, the other of five months. In both cases the ulcerating surface healed over perfectly. One case had no recurrence seven months after last exposure; the other was still receiving weekly exposures. One case of epithelioma of face of four years duration, producing marked ectropion of lower eyelid and considerable pain and discharge. The pain was almost immediately relieved and the discharge rapidly diminished. The ulcerating surface could not be made to heal over completely, two small areas persisting. Three cases of carcinoma of the breast, one primary and two recurrent. The primary case was of two years duration, very far advanced, and treatment had no effect whatever. Of the recurrent cases, one appeared six years after operation, with discharge from axillary scar and recurrences in scar itself. There were many reddened, hard, infiltrated spots over the chest anteriorly and also over scalpular area posteriorly, associated with oedema and great pain in shoulder and arm. The pain and oedema were greatly relieved, but the general condition steadily failed. The other case recurred six months after operation, nodules appearing in the skin along the line of scar. The area was excised and the skin grafted, but recurrence took place in this area and metastases appeared elsewhere. Although very vigorous treatment was given, no irritability of the skin was produced, and the question is asked: "whether the pigment in a negro's skin might not act as a preventive to a Röntgen ray dermatitis." One case of carcinoma of the lower jaw, involving skin over it and cheek with ulceration of nodules was not benefitted in any degree. Two cases of carcinoma of inguinal glands, one following two and one-half years after excision of a small sore on labium said to be epithelioma, the size of a hen's egg, the skin adherent, and with a discharging sinus. No curative effect was observed. The other case was operated upon for epithelioma of prepuce and right inguinal glands. These were enlarged and were removed. Nine months later a second operation was performed for recurrence in the glands; four months later a third, and four months after, a fourth, when it was found impossible to remove them on account of adhesions to the iliac and femoral vessels. At this time the opposite inguinal glands were enlarged. These glands disappeared and no recurrence in right side has appeared nine months after operation. The case is still having Röntgen ray treatment. A case of sarcoma of pharynx, of one years standing, was not benefitted in any way. A case of sarcoma of the buttock operated upon and recurrence two years later, second operation with recurrence one and a half years later.

It was now inoperable, extending through the great sarco-sciatic notch into the pelvis. Treatment diminished the discharge and there was a temporary improvement in general condition, but only temporary.

Sarcoma of the temporal region; first operation 22 years ago, when "several small tumours from the margin of the left eye and orbit" were removed. Recurrence occurred three years later, when a very extensive removal was made, including a part of the zygomatic arch. No recurrences took place for 19 years. Under treatment the swelling subsided and the sense of discomfort was relieved, and the general condition improved. Patient was to report any recurrence but has not done so yet, six months after treatment.

From these and other cases the following conclusions have been drawn:—

1. The small superficial cases of malignant disease seem to be most susceptible to this means of treatment.
2. The relief of pain is a very prominent feature, and is often noticed after the first exposure. In cases which have not progressed too far it is almost possible to promise the anæsthetic effect.
3. It is impossible to determine from our present knowledge without trial what cases will be favorably influenced by treatment, but patients should be warned not to be too hopeful.
4. The danger of burning is a real one, although with precautions it may be avoided. The diminution and discharge and change in it from being purulent and offensive to a serous one, may also be noted.

W. L. B.

Results of Decapsulation of the Kidney.

HAROLD A. JOHNSON, M.D. "A Study of Changes in the Renal and Perirenal Tissues of Dogs After Decapsulation." *Annals of Surgery*, April, 1903.

This research was undertaken upon fifteen dogs, varying in weight between twelve and thirty-five kilogrammes, with kidneys varying in weight between thirty and one hundred grammes. Changes were studied after two, four, and eight days; two, three and four weeks; two, and three and a half months.

Of the fifteen dogs operated upon five died; two from hernia through the wound, caused by having to remove the plaster of Paris jacket too soon, on account of irritation; one from the leakage of urine into the peritoneal cavity, the capsule being so adherent that portions of the cortex were torn away; one, in which, in addition to decapsulation, of both kidneys, the left renal artery was ligated; one dying directly from shock in which simple decapsulation was performed.

The relation of the peritoneum to the kidneys is different from that in man for in the dog it covers over three-fourths of the surface, and

there is also quite an extensive circulatory anastomosis between the peritoneum and the kidney. As a result the peritoneal cavity has to be opened in any operation involving decapsulation of the kidney in the dog.

The changes noted are summed up as follows: First, the capsule of the normal kidney consists of two distinct layers, the outer much thicker, the inner very thin and the direct continuation of the intertubular connective tissue; second, in decapsulation, the outer layer only is removed, leaving the inner lacerated but adherent to the kidney's surface; third, at first a thin exudate appears on the free surface of the kidney, which, with the remains of the inner layer, gradually becomes a fibrous investment, resembling microscopically the normal capsule, in that it strips readily, and with the passage of time becomes firm.

Fourth, microscopical examination reveals the fact that it is in some cases thicker and in others thinner than the original; the former generally being true, and that in most cases it varies greatly in thickness in the same specimen.

Fifth, the structure, at least up to three and a half months, does not become differentiated into layers, but is one homogeneous mass of fibrous tissue.

Sixth that this fibrous tissue will form under adhesions and is to be recognized as distinct from them both macroscopically and microscopically.

Seventh, there is sometimes an infiltration with round-cells and a proliferation of the intertubular connective tissue of the cortex, without, however, affecting the glomeruli.

Eighth, in no case was there any considerable anastomosis between the renal and the perirenal blood channels. In one case, at the same time decapsulation of one kidney was performed, the renal artery of the other was ligated. This would presumably call for increased activity in the circulation of the decapsulated kidney. It was all, however, made up by the increased size of the renal artery and vein, and not through a peripheral anastomosis.

In his concluding remarks the writer points out the difficulties of drawing inferences as to the value of decapsulation as a curative or palliative measure in chronic glomerulonephritis, the chief one being that so far it has been found impossible to produce this condition in dogs. With reference to theories advanced to explain the causes of the benefits obtained in these cases, this research would seem to support the view advanced by Israel and Pousson, that they are due to relief of tension, and not to the establishment of a collateral circulation, as advanced by Edebohls.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

April 3, 1903.

H. S. BIRKETT, M.D., PRESIDENT, IN THE CHAIR.

Thyroidectomy under Local Anæsthesia.

DR. G. E. ARMSTRONG exhibited a patient upon whom he had performed a thyroidectomy by cocainization. The patient, a young woman, had a large unilateral thyroid which was considered by the operator to be probably a fibro-adenoma. A one per cent. solution of cocaine was used and the skin injected over an area corresponding to Kocker's incision,—starting from a little below the entrance of the artery into the growth down towards the front of the growth, and thence towards the sternum, ending at the suprasternal notch. The incision was made, the outer flap reflected, the superior and inferior thyroid arteries secured, and the growth turned out and detached. The advantages claimed for this method were; that it was painless, that as the patient was conscious and could use her voice, the operator could be perfectly sure that he was not injuring the recurrent laryngeal nerve, and that an incision in this position allowed of free access to the part. Dr. Armstrong stated that he took the ground, that, if Kocher of Berlin, who had performed over two thousand operations upon enlarged thyroids, preferred it, it must be a good method of procedure. In several operations which he had performed by this method there had been no hæmorrhage. In the present case the wound was closed with a small, subcutaneous, glass drain, which was left in for twenty-four hours and then removed. The patient was exhibited two weeks after the operation had been performed.

DR. McCRAE stated that the tumour was a mixed growth, partly colloid, partly cystic and partly adenomatous, quite an unusual combination.

DR. ENGLAND asked whether there had been any symptoms of exophthalmos or whether the growth pressed upon the trachea.

DR. ARMSTRONG, in reply, stated that his reasons for operating were: first, because of the unsightliness of the growth, which was increasing pretty rapidly; and secondly because, while there was no tremor or exophthalmos, the pressure of the growth had interfered with breathing to such an extent that on going upstairs the patient had had to rest several times. In the present case he had first tied the arteries and

then divided the isthmus, but in some cases he had divided the isthmus first.

Excision of the Tongue.

DR. G. E. ARMSTRONG showed a patient upon whom he had performed excision of the tongue. The case presented all the points of interest which were associated with the question of cancer of the tongue and the method of dealing with it.

The patient had come to the hospital complaining of a lump under his tongue, and had first noticed pain upon eating, four months previously, but had not discovered the cause. Two weeks before coming to the hospital he had gone to one of the city hospitals, and the growth under the tongue was pointed out to him and two sections taken from it, but the patient was not informed as to what it was. Treatment had been carried out there for two weeks without appreciable effect. The pain was on eating only and invariably radiated round to the right ear. The man had not lost flesh so far as he knew, and had never had any other disease. He had been married forty years and had five children alive and healthy. There was no family history of any interest.

The growth had involved the right half of the under surface of the tongue just at its junction with the floor of the mouth, on to which it extended and covered an area as large as that on the tongue. It reached a little across the middle line, and thus involved half the under surface of the tongue and more than half the floor of the mouth. It was shown to be carcinoma. The advisability of performing a preliminary tracheotomy was one of the questions which had arisen, and one upon which the speaker confessed that he had held strong views for many years, considering it the only safe procedure. In his first five cases he had done it with perfect success, but in the sixth omitted it, and the patient died of septic pneumonia. He had then returned to the first method until a year or two previously, when he had been induced by a strong argument of Mr. Butlin's to omit it, but the consequence was increased mortality at once, from an occasional complication of septic pneumonia. Since then he had been in the habit of performing a preliminary tracheotomy one or two weeks before removing the tongue in order to allow the patient time to become accustomed to the tube. The advantage of this was that at the time of operation one could block the entrance into the trachea so that nothing from the mouth could get into the larynx, and then treat the stump as nearly as possible in an aseptic manner, keeping it clean and free, packing with iodoform gauze, and feeding the patient through a tube, until the wound had granulated over.

As there was extensive disease in the present case, Dr. Armstrong had done Butlin's incision on both sides, gaining free access to the submaxillary glands, those under the jaw and the little bunch at the bifurcation of the carotid, which were found enlarged; they were removed but did not prove to be malignant. It was a matter of principle to remove these as the cause of the enlargement could not be determined at the time of operation. The tongue had been removed to about two inches behind the growth, and it was hoped that the little stump would help the patient in speaking and masticating.

Old Dislocation of the Ankle.

DR. ARMSTRONG showed a man, 53 years of age, who, 26 years before, had been thrown from a horse and received an injury to the foot which a skiagraph (exhibited) showed to be dislocation of the ankle. The condition of the man's thumbs was also interesting, the proximal phalanx being dislocated in both hands by contracture of the palmar fascia. The man had long been a sufferer from rheumatism.

Sarcoma of the Breast.

DR. ARMSTRONG exhibited photographs of this case and related the history, of which the following is a synopsis:

The patient, a woman, aged 35, came to the hospital complaining of the size and weight of her left breast and also of free bleeding having taken place from it on several occasions. She had been born in Montreal and always lived there, had had the usual diseases of childhood, married at 25, gave birth to four living children, and used alcohol in the form of malt liquors, probably very freely. The growth had begun about eighteen months before entering the hospital, while nursing, as a hard and painful lump, the size of a walnut, just to the inner side of the left nipple. She had tried to reduce it by rubbing on a liniment, but it had remained and slowly increased in size, being about the size of the fist about one year before. It had then begun to enlarge and got softer and about three months before admission, hæmorrhage occurred from it; according to the patient's statement about two quarts of blood had been lost. Since that time there had been frequent hæmorrhages. Dr. Armstrong removed it very freely together with a few glands showing inflammatory enlargement from the axilla.

DR. McCRAE reported upon the pathology of the tumour. It weighed about four pounds, and was for the most part benign, of the ordinary fibro-cystic nature, and it was to be supposed that up to the time of rapid enlargement it had been an innocent one. In very many places, however, sarcomatous cells could be found in quite distinct masses, and it was presumable that to this the extremely rapid enlargement of the growth in the past six months had been due.

DR. KEENAN had seen a case last winter where there was a clear history of fibro-adenoma having been present for ten years and then rapid enlargement following a slight injury. The growth had proved to be fibro-adenoma with sarcoma cells invading it.

Deformity following Anterior Poliomyelitis.

DR. A. MACKENZIE FORBES showed a patient with deformities due to anterior poliomyelitis and explained the nature and cause of deformities.

Pregnancy complicated by Ventro-Fixation.

DR. J. J. ROSS reported this case.

DR. W. W. CHIPMAN had been associated with Dr. Ross in this case and thought it a very interesting one and somewhat exceptional, in that there was a history given of a number of labours before the operation and a number after, and thus a comparison could be drawn between them. He had been called to see the case on Nov. 5th and found her rather a short-bodied woman in very urgent labour, with frequent, severe and protracted pains. He had noticed that the pains were not of the usual second stage character, showing very little of the down-bearing quality. On inspecting the abdomen the uterine tumour had been seen to be more than usually prominent and rather unusual in shape, rather wider from side to side than the usual pyriform tumour. There was the mark of a laparotomy wound and traction upon it during a pain and palpation had been difficult owing to a state of tonic contraction of the uterus. By vagina, the cervix had been found very high up and the topography of the parts obliterated by a firm tumour mass, about two inches in diameter, lying directly behind the symphysis pubis and ending in the anterior lip of the external os. Three methods of procedure were considered—Caesarean section, turning, or forceps, and it was decided to attempt the latter first. Turning would have been difficult on account of the fact that the walls of the uterus were firmly contracted around the child and were unusually thin, while the after-coming head would have been difficult to deliver. The long axis traction forceps were used, and when applied the lock of the forceps was at the level of the external os and the fixation handles were out of sight. When delivery was completed the head was found vigorously moulded, but both mother and child made a good recovery and the latter showed no pressure paralysis.

Dr. Chipman pointed out that there were three features of special interest in this case, the nature and etiology of the mass in front, the difficulty in diagnosis and the choice of treatment. With regard to the first, it had to be remembered that in ventro-fixation, the fixation in-

cluded not only the peritoneum but also the rectal fascia and that when the wound healed by secondary intention as in this case, the point of fixation was more widely fixed. As dilatation took place it would be chiefly by expansion of the posterior wall. With the fundus of the uterus fixed, the anterior wall of the uterus could not expand, and it consequently went on thickening while the posterior wall was expanding, thus giving rise to a physiological tumour. The posterior wall thus expanded sufficiently to contain a full term child, the cervix was tilted further back, and the axis of the uterus altered. Although he had delivered four cases of pregnancy following ventro-fixation, the speaker had never seen this condition before. With regard to the question of diagnosis, the only thing which this mass might have been mistaken for would have been an ordinary fibro-myoma. As the latter was formed chiefly of fibrous tissue and its vascular supply was poor it was very apt to slough if handled roughly, and in such a case Cæsarean section would be the proper method of treatment. With respect to the choice of treatment, all one could say was that the patient, when seen five months after parturition, was found to have the uterus well fixed and in good position.

DR. H. M. KINGHORN of Saranac Lake, read an exhaustive paper upon "The Early Diagnosis of Pulmonary Tuberculosis."

DR. LAFLEUR in opening the discussion insisted with Dr. Kinghorn upon the necessity for accuracy in physical examination, which was the basis of all diagnosis, not merely relying upon new apparatus and refined bacteriological examinations. His experience was that physicians erred because they had not taken the trouble to make a careful examination of the lungs from the apex to the base; they often neglected to examine the apex from the back, which he thought was a very important proceeding. Too much stress, he thought, should not be laid upon the agglutination test, nor upon the positive or negative examination of the sputum, unless specimens were repeatedly and thoroughly examined; neither did he think that plates made by the X-Ray process added very much to the information which could be obtained by the ordinary methods of percussion and auscultation, if only these methods were carried out with care and thoroughness.

DR. GIRDWOOD called to the attention of the Society, the case of a young woman whom he had examined by means of the X-Rays, and found the bases of both lungs nearly solid, though there had been no previous intimation of tuberculosis. He pointed out that one of the earliest symptoms of phthisis was a shortened excursion of the diaphragm, and he believed, that with a wider experience of this comparatively new method, results of great value would be obtained. To

be of any value, the apparatus must be used by expert hands and eyes trained to recognise the normal as well as abnormal conditions.

DR. BLACKADER remarked that great as was the difficulty in diagnosis of tuberculosis in its earliest stage in the adult, that difficulty was even greater in childhood. He discussed the opinion held by many authorities, that it is during childhood, tuberculosis establishes itself in the system, and whilst it was his view that the record of autopsies did not confirm this opinion, yet everything pointed to a still more zealous care of children. He referred to the fact that in early life it was to the glands rather than to the tissues, they must look if they would find the earliest seat of trouble; to the bronchial glands rather than to the lungs themselves. He admitted the great difficulty in the diagnosis of this deep-seated affection in children, and referred to two conditions which were of use for guidance—loss of weight and persistent fever. He emphasized the value, as diagnostic signs, of the physical history, the tendency of any simple affection to run a tedious course, and the enlargement of the supra-clavicular glands. In conclusion, he demanded a greater consideration for anæmia in children, as being one of the early symptoms of tuberculous infection requiring something more than a course of iron and arsenic, and calling for treatment by fresh air, especially if the anæmia were accompanied by enlargement of the glands.

DR. G. GORDON CAMPBELL referred to the autopsies which yielded a large number of old tuberculous lesions in the lungs. In these cases it must have happened that the patient was devoid of symptoms specifically pointing to that condition. He considered that examination in cases of ordinary colds was not thorough enough, and that they must not exclude tuberculosis because cough and expectoration were absent.

DR. NICHOLLS in the course of his remarks called attention to some points of importance in the diagnosis of tuberculosis, that had suggested themselves to him in his laboratory experience. After a practical knowledge of the ordinary methods, his conclusion was that of Drs. Kinghorn and Lafleur, that the careful physical examination of the patient was of prime importance in early diagnosis. Sputum was always examined as a matter of routine, yet several fallacies appeared and the test had its limitations, specially in the early cases. Dr. Nicholls had repeatedly failed to discover the bacilli after repeated examinations, where there had been positive clinical evidence of the disease. Speaking of the methods of examination, he referred to a number of bacilli,—the Smegma, the B. Moeller, Butter bacillus, the B. of Rabinowitch, the B. of Lustgarten and the B. of Lepra—which like the tubercle bacillus were stained by the ordinary Gabbet method in which the mineral acid was used as a decolorizer. Pappenheim, Fraenkel and

Ophuls, among others, had noted such bacilli in cases of gangrene of the lungs and the researches of Laabs (1901) went to show that those bacilli were present in the mouth, so that without special precautions one was liable to draw erroneous conclusions. Consequently Dr. Nicholls had given up the Gabbet method and used a stain composed of a saturated solution of methylene blue in absolute alcohol, to which was added 1% of corallin as a decolorizer. This decolorised all bacilli except the tubercle and leprosy bacillus in three minutes. The method of E. W. Hammond referred to by Dr. Kinghorn, he had found very useful. Brieger noted that where bacilli were not present in the sputum, they had been found in the fæces. With regard to the agglutination test Dr. Nicholls had worked with this in association with Dr. Richer, and their results were in accord with those of Arloyng and Courmont, as to the test in diagnosis. The difficulty with the test, was that it required great care and it did not appear to be absolutely specific. Like others, Dr. Nicholls had found positive reactions with the dog, sheep and the cow, and the fact that cows gave the reaction of 1-15, or even higher, showed that the test was likely to be of little use in cattle. In human beings it was to be remembered that certain drugs, such as Eucalyptol, Guaiacol and corrosive sublimate would confer agglutinative powers upon the blood serum. Before much could be said of the test, however, in the early diagnosis of tuberculosis more work would have to be done. As yet, they did not know at what stage the agglutination reaction appeared, or how long after apparent cure it might remain. Again, observers were by no means agreed as to the wisdom of basing prognosis upon the intensity of the reaction. The test was valuable to a certain extent, when taken in association with other means of investigation.

DR. RICHER discussed the agglutination test, and expressed the belief that the method would in time be proved to be of great value. In regard to tuberculin, he was of the opinion that it was a perfectly harmless substance and had always proved so in his hands.

DR. JAMIESON said that tuberculin was a very reliable test in cases strongly suspicious of tuberculosis and could be used with safety. He quoted cases to show that the test must be used with thoroughness and sometimes frequently repeated before its value could be brought out.

DR. SHEPHERD had obtained some excellent results with tuberculin, as a means of diagnosis in surgical tuberculosis, in one case of injury to the knee joint, where there had been no suspicions of gonorrhœa, the joint would not get better and tuberculin was given. The patient did not react to 1 m. or 3 m., but to 6 m.; he reacted sharply, and eventually the condition proved to be tuberculosis of the knee. He had also seen tuberculosis of the bladder react very well. There were two

exceptions to the rule of reaction in surgical cases, namely, that tuberculin did not react with tuberculous peritonitis, and that it did react in cases of gonorrhœal rheumatism.

DR. KINGHORN agreed with Dr. Nicholls that Gabbet's stain was very unreliable and insisted upon the necessity of great care in making microscopical examinations. He quoted cases to show the value of the X-Ray method, and others to show its uncertainty, but he concluded, that all methods were only accessory to a thorough physical examination.

April 17, 1903.

A Case of Aneurism.

DR. J. ALEX. HUTCHINSON and DR. W. E. DIXON.

J. P., aged 48, furrier, admitted to Montreal General Hospital, February 12th, 1903, with swelling and pain at bend of elbow.

Present Illness:—Began five weeks before entrance. When assisting in wringing out some clothes, he was suddenly seized with pain in the arm, and towards evening he noticed that it was swollen,—at times there is considerable pain felt about the tumor.

Present History:—Patient has not done any very heavy work,—he has used alcohol for a number of years,—he gives no history of syphilis.

Present Condition:—Patient has a pulsating and expansile tumor, just below the bend of his right elbow. It measures 2 x 3 inches. On auscultation, a distinct bruit is heard over the tumor. He is unable to grasp anything forcibly with the fingers of his right hand.

Circulatory System:—The heart is slightly enlarged to the left. He complains of præcordial pain at times,—when the arm is extended the pulse in the radial and ulnar arteries of the right wrist cannot be felt, but when the arm is flexed it can be felt, although much weaker than those of the left side.

Treatment:—Digital compression by relays of students was begun on February 21st, at 2.15 p.m., and kept up for thirty hours, each student holding the brachial artery for five minutes. At the end of thirty hours, a slight superficial pulsation was still felt, and a pad was placed over the brachial artery for another thirty hours. Morphine, hypodermically, was used to alleviate the pain.

The patient has reported from time to time. The tumor is smaller, quite solid, and firm,—no pulsation is felt, except just above the enlargement; this, probably, is due to one of the anastomosing arteries. There is still considerable numbness of the fingers, and the grasp of his right hand is weak.

Arterial Gangrene and Fractured Femur.

DR. J. ALEX. HUTCHINSON and DR. W. E. DIXON.

A. L., aged 44, laborer, received a compound fracture of the left thigh, at the junction of the middle and lower thirds, on November 3rd, 1902, and was admitted to Montreal General Hospital same day.

The wound was carefully cleansed with pure carbolic, and packed with iodoform gauze, hæmorrhage was brisk, and during the night the wound had to be packed with gauze moistened with adrenalin to stop the oozing. There was considerable overriding of the fragments, producing about 2½ inches of shortening. The fracture was caused by his being struck by a bar of iron which was being swung on a derrick,—there was considerable bruising of the leg and foot, due to his being knocked up against some stationary piece of machinery. He was carried for a quarter of a mile on the back of a fellow-workman, his leg dangling in the air during this journey.

On November 6th, patient was taken to operating room and the wound was explored,—Buck's extension was applied, with coaptation splints. No pulsation could be made out in the tibial vessels. November 7th, the foot was cold, the dorsum showing a dark colored area. The extension apparatus was removed, and heat applied to the foot. During the following two weeks, well marked arterial gangrene developed, involving almost the whole foot and lower third of leg. The foot took on the claw-like shape and marbling appearance. There were no constitutional symptoms of putrefaction.

On December 8th, owing to the bad position of the fractured femur, under ether anæsthesia the parts were laid open, the ends of the bone freshened, and silver wire sutures introduced, and the limb put up in a McEwan splint. In six weeks firm union was established. By the end of January, or about three months from the original accident, a line of demarcation, a little above the ankle, had formed, showing moist gangrene.

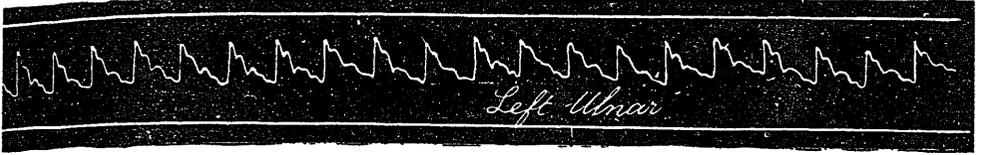
Amputation below the knee joint was performed on January 29th, and at the operation it was noticed that the tibial arteries were small and did not bleed, but numerous small branches, apparently coming from the surface about the knee joint, were seen. The flaps showed little tendency to unite, and in a few days were partly gangrenous, exposing the bone.

On February 26th, re-amputation about 2 inches higher up was performed, care being taken at this time not to separate the subcutaneous tissue from the muscles. The result was more satisfactory, but in front a small portion of the skin again broke down; this is now

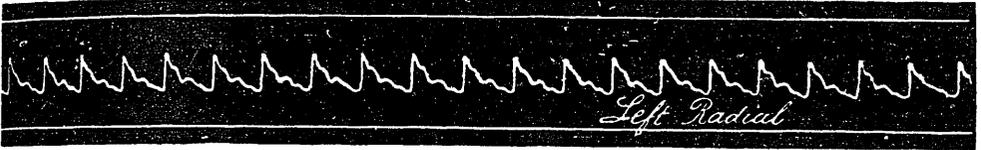


To illustrate Dr. Hutchinson's case of Gangrene of the Leg.

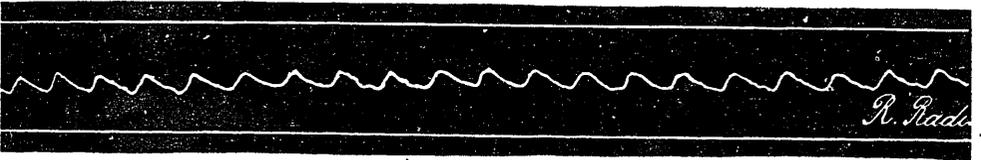
Left Ulnar.



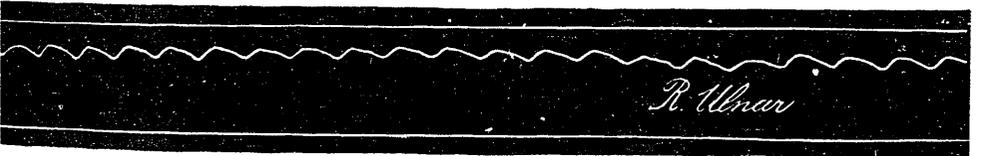
Left Radial.



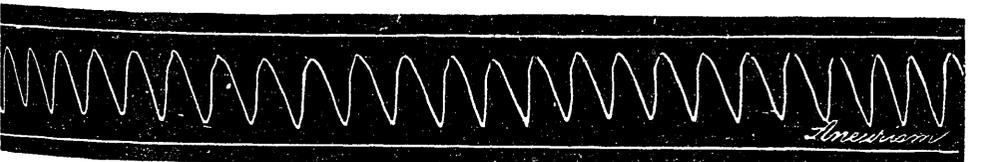
Right Radial.



Right Ulnar.



Aneurism.



Aneurism of Right Brachial.

healing by granulation, and the stump presents the bone well protected by a large pad of posterior muscles.

The pathological report by Dr. Macrae showed that both tibial arteries were plugged by a dark red clot.

This case is evidently one of injury to the femoral artery, in the neighborhood of Hunter's canal, sufficient to have produced one or more emboli.

When the alteration in the temperature of the foot was first noticed, it was thought that the coaptation splints might be producing pressure, but when these were removed, marked overriding of the fractured ends took place, and it then was a question if this might not be producing pressure; however, after a few days the distribution of the gangrene made it apparent that the tibial vessels were interfered with, the distribution of the anterior tibial showing the change a few days earlier than that of the posterior tibial. It will be interesting in the future to note whether the stump, with its limited blood supply, will stand the pressure of an artificial limb.

Epithelioma of Lip.

DR. J. ALEX. HUTCHINSON and DR. E. HAMILTON WHITE.

Patient C. W., aged 56, came to Montreal General Hospital, March 10th, with large fungating mass on lower lip.

Present Illness:—Patient stated that he had noticed a sore on his lip for twelve or fourteen years. This, up to the summer of 1901, was only of the nature of a fissure covered with a scab, which he used to pull off. At that time (Aug., 01) he noticed a small lump appearing at the site of the fissure, and consulted a surgeon. He was told that it was cancer, but would not undergo an operation. Growth much more rapid since September, 1902. He gives a history of smoking a short clay pipe, and shows a typical notch in the teeth to the left of the median line opposite the site of the original fissure. He has lost 10 lbs. weight since September, 1902.

Past and Social History:—No history of syphilis, no family history of cancer or tuberculosis.

Present Condition:—Patient fairly well nourished, skin and mucous membranes good color. There is a large fungating mass springing from the muco-cutaneous border of the lower lip.

The growth involves $\frac{2}{3}$ of the length of the lip, more to the right than the left of the median line,—it shows breaking down in spots, and has the characteristic offensive odour. The mass is $2\frac{1}{2}$ inches in length, roughly, cylindrical $1\frac{1}{2}$ inch in diameter. Further examination shows that it is pendulous, hanging over the chin, the skin of

the chin not being involved. The mass is very hard, bleeding readily on handling or removing dressing. There is enlargement of the submental glands more marked on the left side. Glands at angle of jaw palpable on both sides. Complains of pain of a burning and aching character.

On March 12th, growth was removed by a simple scaphoid incision by Dr. Elder, in Dr. Hutchinson's absence. Dr. Macrae reported that incision was beyond the new growth, though only a very small margin intervened at places. Healing was rapid and complete. Glandular enlargement below chin disappeared.

On March 26th, operation for restoring the lower lip was undertaken by Dr. Hutchinson. A wide V-shaped incision was made which involved the removal of practically the whole of the remaining margin of the lower lip, the angle being prolonged 2 inches below the chin. The tissues were freed from the lower jaw on each side and brought together with silkworm gut sutures. Healing, as before, was uneventful. The submental space was explored during operation,—no glands found. All of the fatty tissue was removed from the space.

Dr. Armstrong said that he was inclined to trust to the V-shaped operation rather than to the more elaborate and difficult methods. He thought that on the whole the simpler method gave quite as satisfactory a result and possessed the advantage of being much more easily carried out.