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THE "NEW LEARNING" IN THE QUESTION OF IMMUNITY AND ITS PRACTICAL BEARING ON DIAGNOSIS AND TREATMENT.

BY
A. G. NICHOLLS, M.A., M.D.

WRIGHT AND DOUGLAS. "An Experimental Investigation of the Role of the Blood Fluids in connection with Phagocytosis." Proc. Royal Soc., 1903, LXX.

WRIGHT AND DOUGLAS. "Further observations on the Role of the Blood Fluids in connection with Phagocytosis." Proc. Royal Soc., 1904, LXXIII.

WRIGHT AND DOUGLAS. "On the action exerted upon the Staphylococcus Pyogenes by Human Blood, and on the Elaboration of Protective Substances in the Human Organism in Response to Inoculations of a Staphylococcus Vaccine." Proc. Royal Soc., 1904, LXXIV.

WRIGHT AND DOUGLAS. "On the Action exerted upon the Tubercle Bacillus by Human Blood Fluids, and on the Elaboration of Protective Elements in the Human Organism in Response to Inoculations of a Tubercle Vaccine." Proc. Royal Soc., LXXIV.

HEKTOEN AND RUEDIGER. "Studies in Phagocytosis, Journ. Infect. Diseases." Jan. 12, 1905.

URWICK. "Observations on the Opsonic Power of People suffering from Tuberculosis." Brit. Med. Journ., July 22, 1905, p. 172.

DEAN. "An Experimental Enquiry into the nature of the Substance in Serum which influences Phagocytosis." Proc. Royal Soc., 1905, LXXVI, Series B.

WRIGHT AND REID. "On the Possibilty of determining the Presence or absence of Tubercular Infection by the Examination of a Patient's Blood and Tissue Fluids." Proc. Royal Soc., 1906. LXXVII, Series B.

In the above-mentioned contributions we have the most noteworthy recent contributions to our knowledge of the greatly vexed question of immunity. For nearly two decades this subject has been to the fore and has been the occasion of a wordy warfare between experimental pathologists the world over. It would take us too far afield to discuss the merits of this conflict in any detail, but it is necessary for the proper understanding of what is to follow to pass in review the facts as they are accepted to-day.

In regard to the manner in which the animal organism protects itself against the ravages of pathogenic micro-organisms which may be introduced within it, experimentalists have been divided into two camps. Metschnikoff is the apostle of the doctrine of phagocytosis, which attributes the cure of infective disease and the production of immunity to the activities of special cells—phagocytes—which include particularly certain leucocytes of the blood, the splenic corpuscles, and the lining or endothelial cells of blood—and lymph-channels and serous sacs. The phenomena of phagocytosis are directly dependent upon the attraction (positive chemiotaxis) existing between these cells and the products of bacterial metabolism. In the opinion of this eminent pathologist and his pupils, phagocytosis is the all important factor in the struggle of the body against infective disease.

Opposed to this view is that of the "Humoralists." The work of Traube, Von Fodor, Pfeiffer, and Nuttall, among others, goes to shew that certain protective substances are contained in the serum and plasma of the blood, which have the power of destroying infective micro-organisms. From this point of view, without denying the fact of phagocytosis, the struggle against infection may be regarded as a sort of scavenging process, the phagocytes taking up and digesting micro-organisms that have been killed or injured by other means. Flugge has graphically illustrated this conception by comparing the phagocytes to the trenches made ready behind the fighting line to receive the conquered dead.

It might at first sight be thought that these two views are incompatible but a little reflection will shew that this is not necessarily so. It is conceivable for example that the bactericidal substances present in the serum or plasma are produced by certain cells, and, therefore, the humoral theory may be merely a corollary of the cellular. More searching experiments would seem to bear this out. Long ago, Hankin proved that the leucocytes of immune animals contain bactericidal substances, and the more recent researches of Buchner, Vaughan, Denys and Havel, and Ribbert, seem to prove that the bactericidal power of blood serum is

due to substances derived from the leucocytes. As the matter stands to-day, it may be said that practically all pathologists are agreed on the great importance of phagocytosis in the reaction of the organism against infective disease. Metschnikoff on his part is constrained to admit that there is an extracellular as well as an intracellular activity brought into play. The points in debate now seem to be the relative importance of this intra—and extracellular activity and various questions in regard to the details of the process by which immunity is brought about.

The process of immunity has been aptly compared to a combat, the micro-organisms damaging the tissues by means of toxic products of their metabolism, the invaded organism in its turn endeavoring to protect itself against the microbe by the elaboration of various defensive mechanisms. If we consider but for a moment the character of the vital processes of the invader and the invaded, we can readily understand that the phenomena of infection and the reaction against infection must of necessity be highly complicated. From all we know of metabolism we may infer with some probability that the mechanism of defense consists in the production of protective substances, which entering the blood stream are in consequence carried to the remotest parts of the body. These protective substances can be demonstrated in the blood and are undoubtedly the result of some vital process on the part of the infected organism, though where they are formed is not as yet known with certainty. Farther, it seems to be generally admitted that Ehrlich's view is correct, that before bacterial intoxication can take place the toxin must enter into a chemical combination with some cellular element of the body. It is important to note in this connection that the chemical affinities in question vary considerably, certain toxins having a special predilection for attacking certain cells, while other cells will escape. Thus, the tetanus toxin and that of rabies have a marked tendency to attack the central nervous system: the diptheria toxin attacks the peripheral nerves: the scarlatina toxin is apt to attack the secreting cells of the kidney, and so on. In order to emphazise this important peculiarity which the toxin has of turning to some class of cell, Wright has suggested the term "tropine" as a suitable designation for bodies of this kind. Adopting this terminology, we may call the protective substances elaborated in the organism to combat these deleterious substances "antitropines". Several types of antitropines are known at the present day, some capable of neutralizing the effects of bacterial tropines, others, the tropines of highly-organized plants, still others,

those of animal origin, such as snake-venom. After twenty years of research we are only now begining to realize the importance of these antitropines and to apprehend to some extent the marvellous complexity of the protective forces of the body. We know, however, that there are different kinds of bacterial antitropines, for example, anti-toxins, agglutinins, precipitins, lysins, and opsonins, and, moreover, that these differ both quantitatively and qualitatively in special cases.

Antitoxins are substances that neutralize the effects of certain bacterial toxins, the best known being those of diphtheria, tetanus, and botulismus. In many diseases it has been found impossible to demonstrate the existence of antitoxin, or, at least, the amount present is so small that it is impossible to detect it.

Pfeiffer has shewn, also, that the protective powers of the immune sera in experimental cholera and typhoid are due to the presence of lysins, substances which bring about the dissolution of the typhoid bacillus and the cholera vibrio. Here, again, there are many affections in which the existence of lysins in the serum cannot be demonstrated. Moreover, before bacteriolysis occurs the bacteria are rendered motionless and gathered into groups. It used to be thought that this phenomenon of agglutination was a necessary part of bacteriolysis but this is now known not to be the case. A serum, for example, that is both agglutinative and bacteriolytic may be deprived of the latter property without damage to the former. Agglutinins are therefore different from lysins.

If an animal receive injections of the blood serum or tissue juices of a second animal, or of egg albumin, peptone, milk, whey, or urine, there develope in the animal injected substances (precipitins), which, when added to clear fluids containing traces of the substances injected, give rise to precipitation. These reactions are within certain limits specific and are valuable in medicolegal cases to detect blood, or semen, and are also of value in shewing the relationship existing between closely allied animal species.

After this preamble, we may proceed to unfold the nature of opsonins and to indicate their practical bearing on the diagnosis and treatment of infective disease, which is the main purpose of this resumé

The work of Wright and Douglas, published during the past two or three years, has thrown a flood of light on the abstruse subject of immunity production. These observers have proved conclusively that the blood-fluids play a most important role in connection with phagocytosis. By investigating the action of the serum and the leucocytes separately

and in conjunction upon bacteria, they have demonstrated that substances exist in the serum which in some way alter the microbes so as to render them an easy prey for the leucocytes. These substances they call "opsonins," from the word "opsono," I "cater for," "provide victuals for." Divesting their method of sundry technical details, it may be summed up as follows. Certain volumes of serum, bacterial emulsion, and leucocytes, previously washed in a half per cent. solution of sodium citrate in normal salt solution, are mixed together, placed in the incubator for fifteen minutes at 37° centigrade. A film is made from this on a glass slide, stained by the modified Romanoffsky method, and the number of bacteria ingested by the leucocytes is determined. The bacteria contained within twenty leucocytes are counted and an average struck per leucocyte. The authors find that the leucocytes have no power to engulph bacteria unless the latter have previously been sensitized by contact with blood serum. Conversely, serum loses its sensitizing power if it be heated to 60° to 65° for 15 minutes. Clearly, then, the serum contains some substance of fundamental importance in determining the fact of phagocytosis. These substances, opsonins, are destroyed by heat, are thermolabile as it is called, and, moreover, act, as Wright and Douglas hold, by effecting some change in the bacteria and not by directly stimulating the activity of the phagocytes. These observations of Wright and Douglas are a technically beautiful and eminently scientific piece of work, and their contention as to the existence of opsonins has been amply confirmed by subsequent investigators, notably Bulloch and Atkin, Hektoen and Ruediger, and Dean. In the case of the sera of animals immunized against certain infections, it has farther been shewn that opsonins are present in the blood in increased amounts, and, moreover, as a result of the inoculation of bacterial toxins the opsonic powers of the blood may be increased.

It would be interesting to know, as tending to elucidate the question whence the opsonins orginate, if there be any relationship between leucocytosis, which is so common a feature of infective disease, and the opsonic content of the blood. Our knowledge at present is not sufficient to give a decided answer to this important question. The experiments of Bulloch and Ledingham on this point have failed to shew any constant relationship between these two factors. With certain drugs, such as sodium cinnamylicum and tallianine, which produce marked leucocytosis, no increase in opsonin could be made out. With the nuclein of yeast, however, they observed a notable increase in the opsonic content, often unassociated with leucocytosis. Huggard and Morland,

in the case of man, found that the internal administration of yeast produced an increased opsonin production as well as a marked leucocytosis.

As the matter now stands, practically all investigators are agreed as to the fact that the blood serum contains substances which are absolutely essential to phagocytosis, but some doubt still exists as to the nature of these opsonins of Wright and Douglas. Dean, for example, holds that opsonins are thermostable and are, therefore, to be identified with the specific immune body, "fixateur" or "substance sensibilisatrice," previously described by other observers, notably, Denys, Metschnikoff, Savtschenko, and Levaditi. Dean was able to make out from experiments both with normal and immune sera that the destruction by heating of the opsonin in both kinds of sera is only fractional and that its apparently complete disappearance is due to the method of observation employed, which demonstrates its presence only over a very short range. His observations, also, tend to confirm the idea that the opsonins of normal blood serum are the same as those of immune sera. The fact that normal sera contain an immune substance has, of course, been known for some time. The normal anti-toxin (e.g., of diptheria) and anti-ferments need only be mentioned. The work of Pfeiffer, Bordet, Moxter, Ehrlich, and Morgenroth, has firmly established the fact that the bacteriolytic and hæmolytic actions of normal serum are due to the presence in the serum of an immune body plus a complement. With regard to opsonins, it is still undetermined whether free complement may take part in the preparation of the microbes, but Dean's work goes to shew that this at all events is not a necessary factor in the case.

In the light of these experiments we are in a position to appreciate more fully something of the nature of infection. When bacteria gain an entrance into the economy some of them are immediately sensitized by the serum and are engulphed by the phagocytes. The amount of the immune substance in the plasma is, however, small and the supply is soon exhausted. Consequently, the organisms that escape its action are able to multiply and are either indifferent to the phagocytes or exercise a repelling influence upon them in the absence of the naturally present immune substances.

Hektoen and Ruediger have shown that, like complements, opsonins may be neutralized or bound by various salt solutions. ($CaCl_2$, $BaCl_2$, $SrCl_2$, $MgCl_2$, K_2SO_4, $NaHCO_3$, $Na_3C_6H_5O_7$, $Na_2C_2O_4$, $K_4Fe(CN)_6$) and other substances, such as formalin, so that they cannot act on bacteria. They suggest that antiphagocytic action of this nature may be an important factor in the establishment and progress of various

infections, especially those caused by streptococci, pneumococci, and other microbes in the destruction of which phagocytosis is an important factor.

The importance of these researches on the opsonic content of the blood, apart from the light they throw on the obscure question of immunity production, lies in the fact that they afford us rational indications for the treatment of certain of the infectious diseases by the vaccine method, a method which, since Koch's initial work on tuberculin has fallen undeservedly, as it would seem, into disrepute, has been developed almost exclusively by Wright and his pupils in England.

The vaccine usually employed is a culture of the microbe which has been the cause of the infection. The culture is a suspension in salt solution, sterilized by heat at a temperature of 65°—70C°. Wright has emphasized the necessity of working quantitatively in this branch of therapeutics. For microbes like the staphylococcus, pneumococcus, and b. typhi, Wright determines the number of bacteria by mixing definite quantities of normal blood and the emulsion of the culture. A film is then made and stained. The proportion of bacteria to red corpuscles is determined by counting a number of microscopic fields and the bacteria are estimated on the basis that 1 c.cm. of blood contains 5,000 million red corpuscles. In the case of tubercle vaccine the new "bacillus emulsion" of Koch, which is standardized, is a very suitable agent to use.

As a necessary preliminary to treatment the opsonic content of the serum must be determined by the method already referred to. As a rule, this is stated as the "opsonic index." This opsonic index is the result obtained by dividing the number of bacteria taken up per leucocyte in the presence of any given serum by the number taken up per leucocyte in the presence of the serum of a normal individual. To take an example; If the number of staphylococci taken up per leucocyte in the presence of a given serum be 14 and the number taken up per leucocyte in the presence of a normal serum be 20, then 14 divided by 20 gives us 0.7 as the opsonic index of the serum in question. Of course, to obtain a reliable opsonic index it is necessary to know what variations, if any, occur in the opsonic content of the blood in healthy individuals, or at any rate in persons not infected by the particular microbe the phagocytic power against which is to be tested. It has been found by Bulloch and Urwick that in normal individuals the opsonic index lies between 0.8 and 1.2, with an average of 0.97, in the case of the tubercle bacillus, and the same is apparently true of the opsonic index for the staphylococcus.

Farther, the opsonic index in such persons does not vary from day to day and does not suffer deterioration for at least twelve hours after withdrawal from the body.

It is quite different when we come to consider the opsonic index in cases of infectious disease. Here variations from the normal may be considerable. Wright in his earlier experiments in the cases of localized staphylococcic and tubercular infection found the opsonic index to be below unity. Urwick, who examined 54 cases of tuberculosis, including lupus, pulmonary phthisis, and surgical tuberculosis, obtained a different result, to this extent, at least, that in many cases, especially of pulmonary tuberculosis, the index was above normal, the variations lying between 0.3 and 2.6. In 33 cases of phthsis the index was above 1 in 25 cases, below 1 in 7 cases, and was unity in 1 case. Bulloch investigated the opsonic index in 150 cases of lupus. Compared with an average index of 0.97 in healthy people the average in lupus cases was 0.75. In 25 cases of uncomplicated localized staphylococcic infection the index was below normal constantly. The inference to be drawn, with regard to tuberculosis especially, is that in lupus and glandular disease the opsonic index tends to be below the normal: in pulmonary tuberculosis the index is variable, but tends to be above the normal. The "lungers" with a low opsonic index are usually in a very advanced stage of the disease and have an exhausted resisting power. The meaning of these variations will be discussed when we come to consider the diagnositic and prognostic import of the test.

A point of great importance in regard to the interpretation of the results and as affording a reliable guide to the adoption of the remedial measures is this, namely, that the opsonic content of the blood in tuberculous patients varies within wide limits during the course of the disease. We can best understand this if we consider for a moment what occurs after the inoculation of a healthy organism with tuberculin. Wright and others have shewn that after the introduction of a bacterial vaccine, such as tuberculin, (1) There is, subsequent to inoculation, a negative phase during which the opsonic power is decreased: (2) This negative phase is succeeded by a positive phase during which the opsonic power is increased: (3) In the question of treatment, an inoculation is to be regarded as successful if the opsonic power be permanently increased. (4) The same phases occur after every inoculation, but the ultimate result depends upon the correct interspacing of appropriate doses of the vaccine. The effect of a second inoculation, given when the positive phase following the first inoculation is at its height will be to raise the

opsonic index to a still higher level, but the effect of a second inoculation, given during the negative phase will be to reduce still farther the opsonic power already reduced by the first inoculation. In both cases the effect of the inoculation is cumulative.

If we turn now from persons artificially inoculated to those who are inoculating themselves in the course of disease, we have evidence for believing that in a large number of cases the opsonic power follows a succession of positive and negative phases. It is difficult to interpret this phenomenon, as the factors that produce these variations appear to be very complicated, but it looks as if these varying phases of opsonic power are connected with the passage out into the blood at irregular intervals of tuberculin derived from some local focus of infection, or, in other words, a self vaccination. The practical conclusion to be drawn from all this is that, believing as I think we must that a high opsonic index is a sign of a certain amount of resisting power on the part of the patient, where the method of treatment by tuberculin injections is adopted, care should be taken to regulate the dosage and the time of administration so that the opsonic index is constantly kept at a high level, and that a negative phase should never be farther accentuated. This implies that frequent examinations of the opsonic index should be made in all cases under tuberculin treatment. Of course this is a great labour and, again, would likely be fallacious, save in skilled hands, yet it might be carried out in sanatoria where the proper conditions can usually be secured. It is often stated that a small dose of tuberculin given at intervals of seven to ten days is sufficient to give satisfactory results without examination of the opsonic power. This may be so, but it not infrequently happens that the negative phase after inoculation may last more than ten days and from clinical signs we get no evidence of this. If in such a case a second inoculation were given, evil rather than good would result. Where examinations cannot be properly and systematically made the best plan is perhaps to give a very small dose at first, the inoculation to be repeated in ten days, the future course to be pursued then depending on the patient's clinical condition. With regard to the important question of dosage. Vaccines are powerful agents and Wright and others have shewn that tubercular patients are extremely susceptible to their action. Consequently, they must be exhibited with great care and only the smallest dose employed that will produce the required effect.

A word or two also should be said in regard to the selection of patients for treatment by the tuberculin method. The most favourable cases are

those of surgical tuberculosis with a low opsonic power which can be increased by appropriate inoculation. In such we often get well-marked improvement. It is as yet doubtful to what extent patients with a high opsonic index will benefit from the treatment. Some may, but the treatment must be carried out with great circumspection, for a high opsonic index may herald the incidence of a negative phase, and an injection given at such a time may simply precipitate or accentuate the fall. Here, we can only test the matter, subsequently being guided by the clinical course of the case.

All this may appear to some to be somewhat speculative, but we may remark that, while experimentalists may theorize, in this case their theories are based on a fairly firm substratum of facts. The proof of the pudding is in the eating of it, and the value of any theory may be deduced from the manner in which it works out. Let us take, for example, Wright's first attempts at applying his views to therapeutics. He published 20 cases of furunculosis, sycosis, acne, most of a severe and intractable type. These he treated by inoculations of dead staphylococci, giving from 500 to 2,500 millions at a dose. His results have been strikingly good. Bulloch, too, treated 11 staphylomykoses by Wright's method, namely, 15 cases of facial acne, 4 of furunculosis, and 2 of sycosis. With the exception of one case of sycosis, all were chronic and had defied ordinary therapeutic measures, which had, moreover, been carried out with great thoroughness, as most of the patients were medical men or students. Of the 11 cases 9 have been completely cured or greatly improved. One case of boils and one of sycosis have shewn a great tendency to relapse and could not be regarded as cures. It is probable that the method of inoculation may eventually be extended to other fields of surgical practice, though as yet little has been done in this direction. Glover Lyon has recorded a case of pneumococcic empyæma, which, in spite of operation, did not do well, in so far that nine weeks after the resection of the rib there was considerable discharge. The inoculation of 100 millions of pneumococci at once gave rise to improvement and after two subsequent inoculations complete cure was brought about. Wright has, also, published the histories of a number of cases of localized tuberculosis treated by his method with Koch's new tuberculin, cases which had been regarded by the hospital clinics as incurable. The result has been to shew that the new tuberculin has marked healing properties, and, moreover, that minute doses often suffice to bring about a cure. In this field the future is distinctly hopeful.

The value of the character of the opsonic index in the diagnosis and prognosis of disease is still under discussion and a final answer on this

question cannot be given until more facts have accumulated. Wright and Reid hold that the measurement of the opsonic power of the blood is a valuable aid in the diagnosis of tubercular infection. They summarize their conclusions as follows:

(a) Where a series of measurements of the opsonic power of the blood reveals a persistently low opsonic power with respect to the tubercle bacillus, it may be inferred, in the case where there is evidence of a localized bacterial infection which suggests tuberculosis, that the infection in question is tubercular in character.

(b) Where repeated examination reveals a persistently normal opsonic power with respect to the tubercle bacillus, the diagnosis of tubercle may with probability be excluded.

(c) Where there is revealed by a series of blood examinations a constantly fluctuating opsonic index the presence of active tuberculosis may be inferred.

In the case where we have only at our disposal the result of an isolated blood examination we may conclude that

(a) Where an isolated blood examination reveals that the tuberculo-opsonic power of the blood is low, we may,—according as we have evidence of a localized bacterial infection or of constitutional disturbance—infer with probability that we are dealing with tuberculosis—in the former case with a localized tubercular infection, in the latter with an active systemic infection.

(b) Where an isolated blood examination reveals that the tuberculo-opsonic power of the blood is high, we may infer that we have to deal with a systemic tuberculous infection which is active or has recently been active.

(c) Where the tuberculo-opsonic power is found normal, or nearly normal, while there are symptoms which suggest tuberculosis, we are not warranted apart from the further test described below in arriving at a positive or a negative diagnosis.

The further test referred to consists in this: When a serum is found to retain in any considerable measure, after it has been heated to 60°C. for 10 minutes, its power of inciting phagocytosis we may conclude that "incitor elements" have been elaborated in the organism, either in response to auto-inoculations occurring spontaneously in the course of tubercular infection, or, as the case may be, under the artificial stimulus supplied by the inoculation of tubercle vaccine.

Further help is obtainable by comparing the opsonic power of the patient's blood with the tuberculo-opsonic power of the fluids derived

from the focus of infection. It has been shewn by Wright and Lamb and again by Wright and Douglas that in the actual focus of infection there is a lowered "bacteriotropic pressure" which accounts for the cultivation of the pathogenic microbe in the interior of the organism which has at its disposal in the circulating blood a considerable reserve of antibacterial substances. To illustrate;

A case of psoas abscess was taken and the blood from the patient's finger and the pus from the abscess were examined. The serum gave an opsonic index with a suspension of tubercle bacilli of 2.4 and with a suspension of staphylococci, 5.0. The fluid obtained from the pus by centrifugalization gave 1.23 and 1.2 in each case respectively. Here, the pus was impoverished in both tuberculo—and staphylo-opsonic substances as compared with the blood. This was taken to mean that there was a combined infection with tubercle bacilli and staphylococci. The inference, so far as it related to the staphylococcus was confirmed by getting cultures of the micro-organism from the pus.

Again, a case of ascites with grave constitutional disturbance in a man of 30. The tuberculo-opsonic index in the case of the blood was 1, in the case of the ascitic fluid was also 1. The inference was that the case was not tubercular. A post-mortem examination shewed the case to be one of miliary carcinoma.

The fact that the opsonic content of the fluid from a local focus of infection may differ from that of the blood serves to give us a hint why it is that these lesions if left alone do not readily heal. If an abscess be incised and evacuated, cure is brought about not so much by the removal of infective material as by the removal of tension. In abscesses or tubercular foci the vessels of the neighborhood, both blood vessels and lymphaties, are compressed and therefore the plasma with its antitropines cannot be brought into direct contact with the infecting micro-organisms. The lesion to all intents and purposes is extravascular. Incise it, relieve tension, and the circulation, is re-established, so that the opsonic power of the blood is in a postion to exert its influence. In skilled hands, and taken in conjunction with the clinical signs, the determination of the opsonic index seems to be a valuable aid in diagnosis. The interpretation of the results obtained by this method of examination is, however, in some cases fraught with difficulty. Thus, in the case of tuberculosis, an abnormally low opsonic index may be obtained in localized disease in cases that are doing well and, again, in severe affections that are going from bad to worse. In the first instance, the low index might, perhaps, be explained on the assumption that such

persons have an inherently poor resisting power, a weakness of constitution, which probably accounts for their infection in the first place. This seems to be borne out to some extent by the fact that some of such patients give a very bad family history. A low opsonic index may also persist long after the cure has been established. This phase of the subject is well worthy of further study. Or, again, it may mean that the immunizing machinary has become exhausted. Patients suffering from the pulmonary form of tuberculosis who have a low opsonic index usually do badly. An abnormally high index, while probably a sign of infection, is found both in cases that do well and in those that are hopeless, so that as a prognostic indication it is apt to be at fault. Probably, it is necessary to determine the variations at different periods before it will be possible to express any correct opinion as to the outcome of the case.

Altogether, the results of the investigation recorded here are most stimulating and encouraging. We see that, rightly used, the inoculation or vaccination method of treating infectious disease is a valuable addition to therapeutics and probably has come to stay. If employed, it should be employed early before the protective mechanisms have become exhausted and are unable to respond to the calls made upon them. It should prove a useful handmaid to the surgeon in whose domain most of the cases that afford hope of amelioration are at present found.

SURGICAL TREATMENT IN GENU VALGUM RECURVATUM PARALYTICUM.

BY

W. G. TURNER, M.D., M.R.C.S. (Eng.)

(Communicated from Breslau.)

Through the courtesy of Prof. Lange I am enabled to report the operation on a patient suffering from this condition, done while I was voluntary assistant in his clinic, as also the result in a case operated upon three or four years previously.

In both cases there was a paralytic condition of the foot; but the absolute disability of the patient resulted from the flail condition at the knee joint. In such paralytic cases the condition of recurvation usually indicates extensive paralytic involvement of the knee flexors, but at the same time preservation of the quadriceps either in toto or with good functional activity. In the cases in question there was also a valgus deformity which, to my mind, was primary to the

recurvation. The result of one case appears to justify this opinion. A strong quadriceps is opposed by weak or disabled flexors, especially on the inner side of the joint. The leg as a support progressively becomes weaker at the point of least resistance, the internal lateral ligament becomes lengthened, the valgus position more pronounced, combined with the recurvation from the action of the quadriceps. Thus the leg becomes useless as a weight-bearing support. The operation goes to the crucial point in the case of providing firm periarticular support at the weak point along with shortening of the weak muscles which helps to counter-balance the excessive action of the quadriceps. Once the condition at the knee joint allowed weight bearing, the correction of the foot to the plantigrade position gave good ground support. Naturally this good result could not be expected were it a pure recurvatum condition, the condition being one-sided, but these two cases demand from the surgeon a recognition of the locus minoris resistantiæ, and if one be present, whether correction of the same will not give a certain percentage of good functional result. These do not in any way conflict with Prof. Lorenz's arguments as to the futility of transplanting portions of the quadriceps to act as knee flexors, or of operative interference in pure genu recurvatum (Lorenz, Meran address, January, 1906).

Certainly the result in the one case justifies the procedure, as four and a half years ago the child was quite unable to walk, and one week before my visit had walked 25 kilometres in the mountains without the help of any stick or apparatus.

Following are reports of the two cases:

Patient, æt 6, female. Poliomyelitis anterior æt. 2, and since then has been quite unable to stand or walk alone, and only with great difficulty when aided by apparatus and crutches. Family history not obtained. *Status præsens*: Patient somewhat anæmic. Nothing abnormal noted except extensive paralysis in both lower extremities, causing pes equinus valgus position of both feet (flaccid) and position of genu valgum recurvatum (flaccid) in both knee joints. Extremities cold, slightly cyanosed, as in most of these cases, and marked atrophy is also present.

Right leg shows paralysis of tibialis anticus and marked paresis of tibialis posticus. At knee marked paresis of flexors.

Left leg: Gastrocnemius the only muscle of the foot functioning. At the knee the same condition as in right leg.

Operation:—Right leg first operated upon—peroneus brevis was trans-

planted to the os naviculare, flexor digitorum united to tibialis posticus and both muscles shortened after the Lange method.

Knee—Incision from insertion of sartorius upwards about 4½ inches. Sartorius determined and then the semi-tendinosus was isolated well up to the muscle belly. The semi-membranosus was then treated in the same manner and the postero-internal aspect of the joint capsule clearly defined. The knee was flexed to an angle of about 170° and held by an assistant. Strong silk was then employed to shorten the capsule, extending from a firm hold in the periosteum of the femur to the periosteum of the tibia, after which the semi-membranosus and tendinosus were shortened until they were quite taut. Wound was closed with subcutaneous drain and fixed by plaster of Paris in partially flexed position.

Left leg operated upon ten days later.

The same operation was performed at the knee: Shortening of the extensors of the foot brought it to a right angle, and the leg from hip to toes was then fixed in a plaster of Paris cast.

After-treatment consists in removing sutures in ten days and slightly extending the leg. This extension is repeated several times with fixation between *séances* until after three months the extremity is straightened. The foot is always fixed at right angles to the leg. After the third month the cast is removed and massage must be regularly practised for several months—combined with "active" muscular exercise and very gradual weight bearing.

I received a very satisfactory answer to my inquiry as to prognosis in a card to examine a patient operated upon four and a half years ago for the identical knee condition, the result of which I report:

Patient æt. 12 years. Anterior poliomyelitis at age of 2 years. Operation for the paralysis æt. 7½ years. Otherwise has always been healthy.

The notes of the case before operation record marked paresis of the knee flexors and a condition of genu valgum recurvatum at the knee joint, also paralysis of the tibialis anticus, paresis of calf muscles and an equinus position of the foot. Both joints were very flaccid and unable to bear weight.

Operation:—The extensor hallucis was shortened and the foot deformity corrected. On the knee the same operation was performed as described above. No preliminary "modellirende redressement" was necessary.

Present Condition, four and a half years after operation: right extremity.

Foot—The position is plantigrade—no supination and little pronation. No plantar flexion, dorsal flexion to 45°.

Knee—Slight genu valgum. Flexion fairly performed, but weaker than extension.

Gait—Patient walks *unaided* with marked side limp, but has no difficulty and can readily *go up and down stairs.*

Marked atrophy of the entire extremity is present, including also the gluteal muscles. Movements are slightly better performed when the leg is warm. Compensatory scoliosis.

On attempting to elicit the Trendelenberg sign the very marked weakness of the right extremity was demonstrated.

Previous to operation, the parents stated, the child was quite disabled and a cripple, while one week previous to this examination she had walked *unaided* twenty-five kilometres during one day in the country.

HYSTERICAL SWELLING OF THE HAND.

BY

A. H. GORDON, M.D.

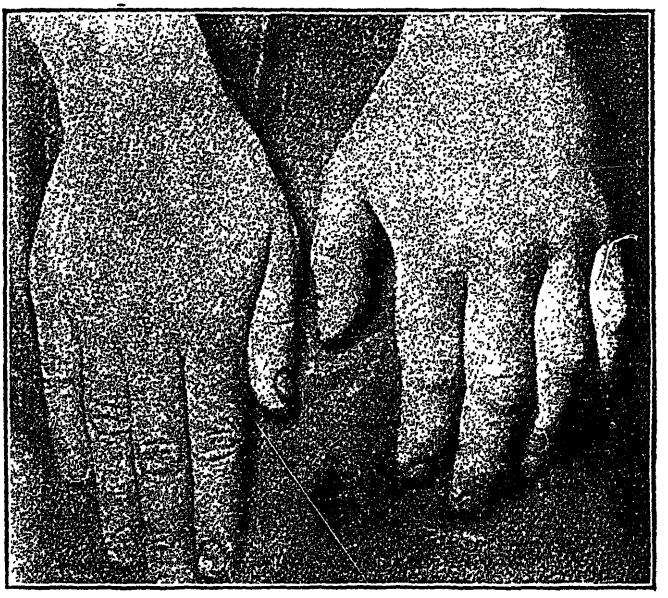
A. B., a young woman, 18 years of age; by occupation, a photographer's assistant, came to me on October 9th, 1905, complaining of swelling of left hand and slight pain and feeling of clumsiness.

On the morning of October 6th, when she woke up, the hand felt awkward, and that night somewhat painful. Next morning she noticed it swollen with some pain over the wrist extending up the forearm.

She had had no feverishness nor headache; no history of chill or vomiting, nor had the arm at any time felt hot.

Family history—No history of rheumatism or tuberculosis, but a very distinct neurotic heredity. The mother is distinctly neurotic, and a sufferer from arthritis deformans; one sister has suffered from major hysteria, having had at different times a hysterical hip joint, talipes, cataleptic attacks, epileptiform convulsions, retention of urine, hysterical vomiting, aphonia, and for several years has been completely anæsthetic to pain.

Present condition—A very well nourished girl, of good colour. Temperature, 98; pulse, 70; respirations, 24. The left hand, up to one inch above wrist joint, is tensely swollen, of a pearly bluish colour, distinctly colder than the right; no pitting on pressure, no spontaneous pain, but some tenderness on pressure over the wrist joint, and a con-



stant heavy feeling up the left arm. Fingers tense, nails of good colour.

Left hand, 24 c.m. in circumference; right, 20 c.m.

Motor power—Flexion, extension, adduction and abduction of hand at wrist almost absent. In same degree power of fingers is lost. With great difficulty picks up a pin or coin, while eyes are open, and cannot do so with eyes closed. Power of arm and forearm muscles good but weaker than right. Sensation of pain up to level of one inch above wrist joint. Heat and cold absent. Sense of touch, tested by cotton wool, absent up to same level.

With eyes closed is unable to perceive characters of objects placed in the hand.

Over the whole left side, as far as the mid-line, there is diminution of painful sensation.

Submammary and iliac tenderness. Distinct globus hystericus. Pharyngeal reflex present. Field of vision to rought test not diminished. Pupillary reflexes and knee jerks present. No visceral manifestations. No signs of venous or lymphatic obstruction in arm. All other organs are normal.

The arm was placed upon a splint and in three days the swelling diminished, and in a week had completely disappeared. With the disappearance of the swelling, the power of movement returned to the hand, and objectively sensation returned; touch appearing first, then heat, cold and pain. The patient had one slight attack of a similar character since.

At first on seeing the condition it occurred to me that it might be due to an idiosyncracy to some drug used in patient's occupation, but its limitation to the left hand, and its sharp demarcation by a line one inch above the wrist were against that.

Venous or lymphatic obstruction, I think, were excluded by the absence of any cause, and arterial blocking by the persistence of pulse in the wrist.

The absence of any febrile phenomena would exclude rheumatism or erysipelas.

A trophic affection from a localized neuritis would not explain the condition, as the distribution of both motor and sensory symptoms was not that of any one nerve.

Then the positive signs of hysteria elsewhere and the distinct neurotic heredity point very strongly to that explanation of the condition.

OUR CHILDREN AND TUBERCULOSIS.

BY

SIR JAMES GRANT, M.D., K.C.M.G.

Few subjects at present before the public, are worthy of more careful enquiry than the health of children, and their environment during the period of school life. Our cities are increasing rapidly in population, residences more in demand, and doubtless, in many instances, the commencement of overcrowding, such as experienced in the cities of New York, Boston and Philadelphia. Under such circumstances, there is need for increased work, along broader lines, to bring about practical results, as far as staying the progress of tuberculosis is concerned.

The systematic medical examination of school children in Canada, has been under consideration during the past year or two, but so far, has not reached any definite form. In the County borough of Blackburn, England, the recent report of Dr. Alfred Greenwood, medical officer of health, has attracted wide spread attention. Of 338 school children examined personally, no fewer than 54 were suffering from tuberculous diseases. It is a serious state of health, that out of 338 children taken at random for examination, 54 should have pulmonary consumption. Such statistics will doubtless prove a surprise to many. The fact that young children are generally not supposed to suffer from pulmonary tuberculosis may account for such states of the system being passed over in a casual manner. Most important points in the early discovery of lung disease are separation from children in health; careful inspection from time to time of those who have been exposed to the disease, and most thorough enquiry into the standard of living in the residences of those diagnosed as consumptives. At this stage of proceeding, what an important place the trained nurse occupies. The principle of isolation is fully set forth to the family in the house, for it is here that the disease is born and bred. The premises must be disinfected frequently and the patients instructed how to properly carry out such. In addition to hygienic measures, the food supply of the family frequently requires examination. If the parents are ill and sent to a sanitorium, the children require under such circumstances, special care and attention. These are a few of the points each local society has before it, and the success in such endeavours depends greatly on the careful watchfulness over minor details.

Systematic medical examination is truly the correct way of defining diseases of school children, and the important responsibility should not be expected of teachers unequal to such scientific medical duties.

The Canadian Association for the Prevention of Tuberculosis is exercising every influence in its power to combat this disease, and the Local Association as well, and yet the death rate in our midst is great in proportion to our population, and requires untiring energy and exertion, backed by the timely co-operation of a willing public, to arrive at such a record as will indicate satisfactory results. Committees on physical deterioration of the race are well enough in their way, but what we require at this stage of progress are true issues, along practical lines, based on common sense principles, vigorously carried into operation. Then and then only, can we hope for a marked reduction in the sad mortality experienced daily in the march of this disease.

It is only within a brief period that the transmission of this disease has attracted attention, and been thoroughly understood. There are to-day, two well-established principles: 1st, That tuberculosis is preventable, and 2nd, That tuberculosis is curable. The problem of the tuberculous is strictly speaking, one of prevention, and not of cure alone. To prevent tuberculosis we must get at the causes, and how are we to grapple with causes more directly than by the careful and searching investigation of the manifestation of tuberculosis in school children. Medical examination will materially aid the health education of the young nation of Canada, all of which in the opinion of the Deputy Registrar General of Ontario, should be considered by a a special committee or commission, appointed by the Ontario Government for that purpose. Such is a move in the right direction of the most commendable character, and if carried out, is certain to lead to practical results. The prospect of long life depends greatly upon the manner in which life has been cared for, and protected in the stage of childhood. In this period, the very corner stones of future strength and constitutional development are placed, so as to build up and construct tissues, possessing the very elements of vitality. The medical examination of schools is well received in England by the Medical Department of "The Educational Committees of London County Council," and the "School Doctor" is an established institution in the land. In Europe also, as well as in the neighbouring Republic and Japan, there is a general consensus of opinion favouring this progressive move for the protection of child life and now fortunately extensively in pratical operation. No form of educational organization can be considered complete which does not make provision for the systematic reference of the health of school children to medical experts, appointed for that purpose. This is, in fact, the only correct method

by which tuberculosis disease can be properly diagnosed and the requisite plan of action adopted to guard the life of the child and prevent communication of the disease to others. With the measures now in operation, it is not surprising the disease is still spreading, and the weekly record in our midst, unsatisfactory. All such points to the necessity for increased exertion in the line of inspection in both the school, and the home particularly, the very key to the prevention of tuberculosis, where as a rule *it is contracted by the child.* The opinion of the recent "Paris Tuberculosis Congress" favoured the idea that the question of healthy dwellings will always dominate the prevention of tuberculosis and declared strongly in favour of the view, that alcohol predisposes to tuberculosis, and aids the disease in the work of destruction. The present care of the child or the adult as far as sanatoria is concerned, is a difficult problem.

There are fully 8,000 consumptives in the Dominion and as to treatment, no adequate preparation. Each life valued at $1,000 indicated a loss annually of fully $8,000,000 with very feeble evidence towards lessening this sad and telling mortality.

Last session the subject of tuberculosis was ably presented by Hon. Mr. Edwards in the Senate and Mr. Geo. H. Perley, M.P., in the Commons, resulting in most favourable comments as to the necessity for action to lessen the death rate in our contry from the "White Plague."

A small grant has been received from the Dominion Government to assist in defraying the expenses of the Canadian Association for the Prevention of Tuberculosis. Beyond this no specific action has been taken, owing to the provisions of "The British North America Act" as to public health. The Ontario Government offers a grant of 40 per cent of the cost of all municipal sanitoria but no grant to exceed $4,000.00. The counties of Perth, Oxford, Wellington and Waterloo applied to the Government for a grant to each county so that they could control $316,000.00 toward the erection of a sanitorium for their joint use. This union of counties is a pratical idea and why should four counties in the valley of "The Ottawa" not do likewise. Such action, followed up by an appeal to the public for private assistance, would enlist sympathy and support, when, as at present, general interest is aroused as to the necessity of immediate action. It is impossible to provide at once for all those labouring under the disease. What is absolutely necessary is compulsory notification of such cases which in time would lead to a classification and greatly assist in the selection of

cases to which attention could be given as to immediate needs and requirements. Dr. Trudeau, of Saranac, favours the idea of having every community build its own sanatorium and receive support, pro rata, from the state or county, the best and most efficient plan from his point of view of combating the disease. The day for expensive and elaborate sanatoria is about over. As a commencement, the simple shack erected at the expense of a few hundred dollars each, will be found most useful and practical. Thoroughly competent medical attendents and nurses are what we require and not expensive structures to overburden willing contributors to this noble and philanthropic work.

An important bill is now before the Maryland Legislature which provides that no child shall work at industry, until they are really twelve years old. Children who should be in the kindergarten, work all night in cotton mills and glass works. In New York to-day, it is a known fact that children 6, 7 and 8 years old are working in cellars and garrets, sewing on buttons, making artificial flowers and other work and in the Republic fully two millions of children, under 16 years of age are earning their own living.

The Bill before Congress for the regulation of child labour in the District of Columbia, if successful, will lead to much improved conditions as to the problem of child labour. No more important subject than that of child labour could be considered by this Association, so intimately connected with the development of tuberculosis from overcrowding and over-taxation of mental and physical energy while the system is really in the formative stage of development. So far, I am not aware that Canada is over-taxed in the lines of child labour, and yet it would be prudent to guard as far as possible, against such, by Legislative enactments now in force.

CHOLELITHIASIS WITH FAT NECROSIS.

BY

J. ALEX. HUTCHISON, M.D.

Mrs H., aged 30, one child born three years ago; admitted to the Montreal General Hospital, March 12th, 1905, suffering from abdominal pain.

History—One day before admission patient was seized with severe epigastric pain, vomiting and nausea. The pain was somewhat paroxysmal in character beginning in the left lumbar region and radiating to the pelvis; there was no pain at any time in the neighborhood of

the right shoulder. The pain continued increasing in violence until admission. Patient states that she suffered from "kidney trouble" nine years ago, typhoid fever twenty years ago and appendicitis of an indefinite character two years ago. Family history negative.

On admission—Temperature normal, pulse 58, respirations 28; complaint of moderate degree of pain in right epigastric region radiating into hypochondrium. No tenderness, no distension. *Urine* at this time showed a specific gravity of 1038, with the presence of sugar; no albumin, no blood, a trace of bile and a few granular casts. A hypodermic of morphia was given with hot fomentations to the epigastrium.

During the following night there was a recurrence of the paroxysmal pain but the character had changed simulating severe labour pains. These bearing-down pains occurred at intervals of a few minutes, and were so severe as to leave the patient utterly exhausted after each occurrence. The pains increased until noon of that day. A careful examination of the vaginal tract excluded any uterine cause for this condition. During the intervals deep palpation of the abdomen caused some pain. The temperature at this time was 101. 1°F., pulse 150, respirations 38. A rectal enema brought away a well coloured stool. There was slight distension with increased resistance. The patient was in an extreme degree of exhaustion. A diagnosis at this time was made of general peritonitis with maximum tenderness in the region of the gall bladder; both flanks were dull.

Operation—Having regard for the previous history of appendicitis, after the usual preparation, a laparotomy was performed the incision being made in the left loin. On opening the peritoneum a large quantity of bile-stained serum escaped; the intestines were found injected with much adherent lymph; the appendix being apparently normal was not removed. The incision was extended upwards to the left costal margin and then at an obtuse angle parallel to the costal margin to the median line. The gall bladder was slightly distended; there were adhesions between it and the liver. Palpation established the presence of a large number of calculi. The common duct could not be palpated on account of the matting together of the tissues in that neighbourhood.

The great omentum and transverse colon were retracted upwards and a hard gangrenous mass the size of an English walnut, apparently the head of the pancreas, was brought into view. This neighbourhood showed the greatest degree of peritonitis and there were a number of areas of fat necrosis. The calculi were removed from the gall bladder by the usual opening and three large gauze drains inserted. The

abdomen was flushed out with a large quantity of normal saline solution and the wound closed. One of the drains led into the interior of the gall bladder, another behind and below the gall bladder in the neighbourhood of the common duct and the third passed below the meso-colon and omentum to the head of the pancreas.

At the conclusion of the operation the patient's condition was desperate; the pulse could not be counted at the wrist and there was a marked degree of cyanosis present. The case appeared to me to be perfectly hopeless; hypodermic injections of strychnia, camphor and ether, hot rectal salines, and subcutaneous salines with artificial external heat were required. After several days of a precarious existence the patient gradually improved until she left the hospital, apparently well on March 6th. The patient has since been under observation on two different occasions, suffering from abdominal pain without vomiting or other constitutional disturbance. On each occasion the attack has lasted a day or two and has not been paroxysmal. On careful examination I have concluded that the condition was functional.

Dr. B. W. Gillies reports the result of the pathological examination as follows: Gangrenous tissue, typical fat necrosis; peritoneal fluid; no growth; cultures from discharge from wound showed a few days after operation, the bacillus coli.

EXTIRPATION OF CHRONICALLY INFLAMED TEAR SACS.

A PROPHYLACTIC MEASURE AGAINST DISEASED CONDITIONS OF THE CORNEA.

BY

FRED. T. TOOKE, B.A., M.D.,

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The practice of excising the lacrimal sac has been followed by ophthalmic surgeons for a number of years, but generally only to remove diseased conditions in this structure. This procedure has, however, also been adopted to advantage as a prophylactic course against the infection of corneal incisions and other serious sequelae in intraocular operations, when the tear sac has been found to be unhealthy. But the routine practice of removing this source of infection as a preventative measure against ulcers and other pathological conditions of the cornea, which produce partial or complete blindness, has only been fully appreciated comparatively recently.

Axenfeld with an experience of many hundred excisions states that nearly eighty percent of these belong to members of the working classes. Such people can least afford the loss of sight, which, unfortunately, occurs in nearly thirty-five per cent of these cases of dacryocystitis by the formation of permanent dense opacities of the cornea resulting in blindness. These statistics cannot but impress one with the serious handicap, placed upon these unfortunates, as wage earners, in the struggle for existence. The tax, which they must sooner or later become to the community is another serious consideration which cannot be overlooked. Such facts show, beyond all doubt, that an individual suffering from chronic dacryocystitis, is constantly menaced by severe ulceration in the cornea, resulting in complete or partial loss of sight, a condition which, in a very great many cases, can be avoided.

Ricchi working on this subject, classifies the results of his bacteriological examinations as follows. The micro-organism by far the most frequently found is the staphylococcus albus. In addition to this he found the staphylococcus pyogenes aureus and staphylococcus pyogenes citreus, the bacillus coli, and streptococci. He also found a host of saprophytes, as the bacillus subtilis, radicosus, ramosus, luteus, fluorescens putidus, and sacchromyces with many others, and in one case showed the presence of the actinomyces albus. One organism, that most dreaded by ophthalmic surgeons in cases of corneal abrasion, the pneumococcus, is strangely enough not included in Ricchi's classification. Axenfeld states that his diplobacillus is also found to flourish here as it does in the conjunctival sac.

Many workers along these lines have shown that if there is a stricture of the lacrimal canal at any point, more particularly at the nasal duct, as is most commonly the case, that stagnation of the drainage of tears is produced, and that no more fertile culture medium can be found than the lining of the sac. We also know that, in diseased conditions of the lacrimal sac, the organism most commonly found there, the staphylococcus albus, assumes a decidedly more virulent form than when it is found in the conjunctiva with the tear sac in a healthy state. Further, when a diseased sac has been removed, that a non-virulent species of micro-organism is generally found to be present in the conjunctival secretion, whilst, when the diseased sac is undisturbed, forms of a much more virulent type are found to flourish.

That there are numerous cases of stenosis of the nasal duct and many of actual dacryocystitis where no rational treatment has been attempted or requested is a fact brought home to us every day by many of the unfortunate conditions of permanent blindness due to subsequent corneal

involvement. We cannot close our eyes to the fact that there are numbers who cannot or will not wear protecting glasses and yet who are, on account of their respective callings, daily exposed to corneal injuries. The mechanic, the foundry-man, the farmer, the lumberman, are to be numbered amongst those who are frequently, unknown to themselves, afflicted with tear sac trouble, at the same time to whom superficial injuries to the cornea are of frequent occurrence. Country people particularly are exposed to tremendous risks. Such people suffering from dacryocystitis are frequently isolated from any one with a definite knowledge of special diseases of the eye, and disastrous results may follow a simple abrasion of the cornea by a wisp of straw or the end of a twig.

An excellent opportunity for permantently curing dacryocysitis and preventing many lamentable conditions of blindness, more particularly in the poorer classes is at our hand in the radical extirpation of the lacrimal sac. Ophthalmic surgeons are slowly but surely becoming convinced of the fact that conservative methods of treatment have been unsatisfactory. Even though the stricture be opened bacteria are still likely to re-collect in their former habitat when the stricture reforms as it probably does after treatment has been discontinued after a little time. The use of the galvano cautery only produces additional cicatricial tissue without completely removing the diseased mucous membrane. Probes are actually dangerous in the hands of the inexperienced; periostitis, false passages, rupture of ethmoid cells, with the formation of chronic inflammatory tissue in the neighbourhood renuering subsequent dissection and extirpation of the sac more difficult and tedious are some of the results due to the use of probes.

Besides, it has been shown, in cases of dacryocystitis that the stricture is produced as a rule, not by a swelling of the mucous cells as we would suppose, but by an engorgement of the subperiosteal veins. Probing the sac in such cases can easily be seen to be useless. Furthermore, in poor people and still more in people living at a distance from medical attendance, it is absolutely impossible to have treatment of a conservative character satisfactorily carried out for any length of time. The conservative treatment, in cases of chronic supperative dacryocstitis, dilatation of the sac, fistulæ, recurrent erysipelas and perilacrimal abscess with dacryocystitis we must admit as unsatisfactory. In actual hypopion ulcer of the cornea or keratitis with any of the above mentioned conditions an excision is not only indicated but imperatively demanded. One must, however, take the precaution of avoiding undue pressure upon the globe.

From a bacteriological standpoint, as I have already related, the procedure of excising the tear sac is most heartily to be endorsed. We have seen that conjunctival sacs with tear passages containing a very virulent micro-organism show a much milder form of bacteria or no bacterial growth at all when once the tear sac has been excised.

But while many have acknowledged that the complete removal of the lacrimal sac in diseased conditions is frequently indicated the operation has been unpopular on account of the hæmorrhage which takes place during the operation. Further, the field is frequently hidden by blood and fragments of the secreting membrane of the sac are left remaining in the wound of the cavity; epitheliation occurs, and fistulæ result. Axenfeld's recent work on the subject and the technique employed and recommended by him have rendered the operation decidedly easier, and have removed many of the difficulties which formerly prevented ophthalmic surgeons from excising the sac, appreciating though they did that a total extirpation was indicated as the best prophylactic measure to be adopted against future corneal trouble.

The method employed by Axenfeld is as follows:— The field of operation is rendered as aseptic as possible by the use of soap and water and then by an application of a solution of bichloride of mercury. Should one prefer to operate under local anæsthesia, a few drops of a four percent solution of cocaine in one-in-a-thousand adrenalin is injected into the tissues about the sac fifteen minutes before the patient is placed on the table. This injection is repeated immediately before the operation. I, however, prefer to operate using general anæsthesia because after seeing a great many diseased sacs removed under a local anæsthetic I am not satisfied that the method is a painless one. A veil of sterilized gauze, with an opening large enough to expose the patient's eye, side of the nose, and upper part of the cheek, is spread over the face. The initial incision is made from the inner canthus directly above the internal angular ligament, two or three milimeters in front of the crista lacrimalis. The incision should be directed downwards and outwards in a crescentic direction for about two and a half centimetres. This incision must be quite deep cutting through the periosteum. A shorter incison than the one I have specfied should not be attempted: there are occasions where a very prominent crista lacrimalis will almost occlude a view of the sac in the under lying fossa, and unless an aperture is made sufficiently large to expose this fossa and its contents there is always the danger of leaving a part of the secreting membrane of the sac in situ. Subsequent fistula formation is the inevitable result. The consideration of a slightly smaller incision from a cosmetic stand-

point is not to be considered; the wound heals by primary intention and after a short time little or no evidence can be found of the previous incision.

One of the chief difficulties in this operation is the suppression of a violent and obstinate hæmorrhage. The employment of Pæns forceps is impossible on account of the smallness of the cavity and because the vessels are situated so deeply they cannot be fastened upon. After the primary incision is made, digital pressure is exerted over the wound for one or two minutes, and then Müller's small speculum is introduced, holding the edges of the wound apart laterally. A much larger speculum, with reversible and adjustible tips corresponding to the ends of small sharp retractors, an instrument specially devised by Axenfeld for use in this operation, is then placed in postion. This separates the edges of the wound vertically. These specula serve two purposes; they expose a quadrilateral field for operation and are of decided assistance in arresting hæmorrhage. In addition, they eliminate the necessity of having an assistant's hands holding retractors in front of the operator. Bloch, of Freiburg, has made a suggestion regarding the control of hæmorrhage which Axenfeld carries out, a procedure which I have followed in the cases upon which I have operated. A large number of wooden applicators about the shape and size of a penholder are previously sterilized and the tips armed tightly with sterile absorbent. Firm pressure and swabbing can be undertaken in this manner, procedures which could not be followed so well with the ordinary gauze sponge. These applications are also of service in re-applying adrenalin solution to the wound.

The periosteum is now carefully retracted forward over the edge of the crista lacrimalis and downwards as far as the bony canal covering the nasal duct. If the hæmorrhage is sufficiently under control the lacrimal sac should be seen nestled in the underlying fossa lacrimalis. The sac is now seized by a pair of fixation forceps and drawn gently forward, while a careful dissection with a pair of small sharp-pointed curved scissors is begun below the sac. A method which I have found to be of decided value and which I always employ at this juncture is, when once I have separated the sac at one point from the underlying fossa, to introduce a tenotomy hook under the sac. I am now able to follow the sac downwards to the nasal duct and upwards to the puncta, always cutting beneath the heel of my hook without fear of wounding the sac above. Very little subsequent dissection of the overlying connective tissue is necessary and the sac is severed as close to the puncta above and to the nasal duct below as is possible. When the sac has

been removed a specially devised curved currette is introduced into the nasal duct which is quite denuded of its mucous surface: this procedure allows subsequent drainage of the cavity for one or two days after the operation, and assures the operator of complete stenosis by the formation of cicatricial tissue about the duct rendering any subsequent infection through the nose impossible. The wound cavity formally occupied by the sac is thoroughly irrigated with warm bichloride solution and the edges of the skin wound are brought together by a few silk sutures. A small firm roll of absorbent cotton about the thickness and half the length of one's little finger is placed over the line of incision, and a firm compress dressing is applied. This should be left undisturbed for three days; the sutures may be removed on the fifth day.

The advantages of this procedure are briefly as follows:—The operation is not dangerous; a very small wound is necessary, allowing one all the space he requires to carry out a complete dissection. As very little disturbance takes place in the surrounding tissue there is no reason for producing secondary complications, as injury to the ethmoid cells, or periostitis. The operation is a complete one; the sac being removed from the canaliculi above to the nasal duct below and the mucous membrane lining the nasal duct being completely curetted away no secreting surface remains; an absolute sense of security from future infection from this source is thus afforded both the patient and the surgeon. From a cosmetic standpoint it is all that can be desired; the very small incision is hardly more noticeable than one of the ordinary lines of the face.

The objection that, after excision of the sac, tears are still secreted and that epiphora continues does not hold. We know from actual experience that when this source of infection has been removed irritation of the conjunctiva is allayed and the reflex secretion of tears not produced. Should, however, tears persist to secrete the difficulty can be readily be overcome by the simple operation of excising the accessory lacrimal gland, a procedure which is never followed by any untoward results.

The third annual meeting of the Association of French-speaking physicians of North America will be held in Three Rivers in June.

At a recent meeting of the Boundary Medical Society, uniform medical contract on the basis of $1.00 per month was adopted and a uniform scale of fees for the whole boundary district was adopted.

THE

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

Remittances advertisements or business communications are to be addressed to the Montrea Medical Journal Co., Box 273; all others to the Managing Editor, 216 Peel Street, Montreal. All communications intended for insertion in this Journal are received with the understanding that they are contributed exclusively to this Journal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript.

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THE PUBLICATION OF PAPERS.

One of the regulations put forward for the Government of the meeting of the British Medical Association, at Toronto, reads as follows: "All papers read are the property of the British Medical Association and may not be published elsewhere than in the *British Medical Journal* without special permission." It is not stated from whom this permission is to be obtained, and we take it to mean that authority is to be sought from the reader of the paper. We may be wrong, but that is the course which this Journal intends to follow in default of better information.

The regulations though signed by the local secretaries, Drs. Starr, Wishart and MacKenzie, were evidently prepared in London. It is excellent journalism to endeavour to secure, so large a body of material for exclusive publication at number 2 Agar Street, and if that is

the intention, we think the fact ought to have been more specifically stated. It is quite possible that other Canadian journals will adopt the view that is within the rights of the reader of a paper to choose the medium through which he will seek publication. This is a principle for which we have always contended, that each Journal should stand upon its own merits, and be free to exercise its own judgment in respect of all papers which are offered to it.

The prestige of the *British Medical Journal* is so immense that it can well afford to adopt this sound principle of freedom, allowing to each reader and to each Journal entire liberty of action. It is quite possible that the official organ will offer the poor privilege of subsequent publication, but that is a gratuity for which this Journal has never strenuously contended. There is force in the contention that all papers which are read at meetings within the British Islands should be printed exclusively in the Journal of the Association. The circumstances this year are so unusual that a new basis of agreement should be sought for the avoidance of confusion and the preservation of good-will.

PRIVATE PATIENTS.

The trouble in Toronto over the demand that patients in private wards of public hospitals shall have the privilege of selecting the physician to whom they shall pay fees is not yet at an end. The *Canada Lancet* in the April issue is hopeful of the result. "It makes but little difference," it says, "what rules the new hospital may lay down, the tendency is growing in Toronto that doctors may attend their own patients, when these patients pay for themselves and are not paid for by the city. Some years ago, a doctor could not attend the highest-priced private ward cases. This was when there was only one hospital. Now, however, there are four general hospitals and a number of special hospitals, and any doctor in Toronto can now make arrangements to attend his own cases, provided they pay for themselves and are not sent in on city orders. This is growing and will in a short time become quite general. It is the determined will of the people to have the right to select their own attendants."

If it is the "will of the people" that the hospitals be opened, as the *Lancet* affirms, they will be opened, whether that procedure works ruin to the hospital or not. We do not look upon the matter as being very important. The private patients are well cared for. The members of the staff who care for them receive some return for their service in the hospital, and unauthorized persons and unapproved methods of treat-

ment are kept out of the wards. We are quite well aware of the arguments on the other side, that it is a hardship to the family practitioner, that the patient is irritated at the restriction which is placed upon him, that public support is withdrawn by those in favour of the open door. If ever the question becomes troublesome in Montreal, we hope to have the experience of our brethern in Toronto to guide us.

MEDICAL INSPECTION OF SCHOOLS.

With that singular capacity for doing nothing which afflicts this community, the medical inspecton of schools has been postponed till September, which means indefinitely. We never displayed any great enthusiasm over this project, and thought the work could be well left to the school boards in co-operation with the family practitioner. However, something was done. Inspectors were appointed. A code of regulations was drawn up which was admirable in its completeness. The one objection was that no physician could be found to accept it. The instructions called for five hours continuous work on four days of the week: twenty hours in all for an emolument of six dollars or thirty cents an hour, which is one third the honorarium allowed to the driver of a cab. This spasm of activity was created by that form of public opinion which has its origin in a club of women. However excellent these organizations they are not celebrated for consistency of conduct or tenacity of purpose. Having accomplished this much they will probably be content. The work will have to be undertaken *de novo*. It is unthinkable that the Health Committee should initiate a new movement and it is a safe hazard of opinion that we have heard the last of this troublesome business.

Dr. F. X. Perrault, former superintendent of the St. Jean de Dieu Insane Asylum at Longue Pointe, died 6th March, 1906, at the Hotel Dieu, Montreal, after two weeks' illness. He was born in Montreal in 1825, and after pursuing his studies at the Montreal College, he studied medicine at Victoria College, and began practice at Pointe aux Trembles, When the Sisters of St. Jean de Dieu took over the asylum he was appointed jointly with Dr. Howard as superintendent. A few years later the Government appointed him a member of the medical board of the asylum. Two years ago he retired from practice. His wife, who was Miss Charlotte Demers, survives him after over fifty years of married life.

The Canada Lancet devotes twenty-five pages of the April issue to a consideration of vaccination. In Toronto the opposition to the practice has grown so strong that the School Board has been compelled to rescind the order making vaccination compulsory. Drs. Macallum, Sheard and Oldright conduct the symposium and introduce many entertaining letters to the newspapers. The public controversy is being carried on with remarkable virulence.

In a communication to the *Bulletin Sanitaire*, Dr. E. P. Benoit, Secretary of the Notre Dame Hospital says: "In the article referring to Hôpital St. Paul, January issue of the *Bulletin*, I have remarked that no mention is made of the fact that patients occupying private rooms in the said hospital may be attended by their family physicians. This, I believe, ought to be made public as it puts the hospital at the disposal of families and physicians, therefore conducing to better isolation and easier treatment of contagious diseases." A similar regulation prevails in the new Alexandra Hospital for infectious diseases.

A well considered appeal for increased support has been issued by the board of management of the Protestant Hospital for the Insane at Verdun. The fact that the cost per patient, last year, was only 55½ cents per day (the Government allowance being only 34 cents per day) as against $1.74 at the Royal Victoria Hospital, $1.35 at the Montreal General Hospital, and $1.32 at the Notre Dame Hospital, shows how carefully the institution is administered.

By virtue of the amendments to the Winnipeg charter, granted by the legislators this year, the Health Department has power to force sewer and water connexions in all houses on streets in which sewer and water mains exist, instead of within the first five limits only, as was formerly the case. There are, it is estimated, about 4,000 houses in the city in which the department will insist on the installation of plumbing under the new powers this year.

The first number of the first volume of the *Bulletin* of the University of Nebraska College of Medicine, has reached us. It contains the most authoritative article which we have yet seen on the *Filaria loa* that elusive human parasite which is occasionally brought to this country by travellers from the west coast of Africa. The *Filaria loa* is a worm about two inches in length, which moves freely in the tissues, and

occasionally coming to the surface produces local disturbance. Dr Henry B. Ward in the *Bulletin* records several cases with operation, some of which were done in Canada.

A new publication to be known as the *Journal of Abnormal Psychology* has appeared under the editorial management of Dr. Morton Prince, of Boston, with whom are associated Professor Munsterberg and Drs. James J. Putnam, August Hoch, Boris Sidis, C. L. Dana and Adolf Meyer. The *Journal* is designed to serve the interests of medicine and psychology, with especial reference to work embodying clinical and laboratory research in connection with abnormal mental states. The *Journal* will discuss hysteria, amnesia, fixed ideas, obsessions, automatism, multiple personality and similar subjects.

Dr. B. D. Gillies, for several years house pathologist at the General Hospital has left Montreal to reside in British Columbia. Dr. Gillies is a sound pathologist, and, whilst in Montreal he impressed the profession by the thoroughness of his work, his adherence to fact and restraint in his statements. In these respects he maintained the tradition of Wyatt Johnston. Dr. Gillies will be a scientific nucleus in his western home and of more value to British Columbia than a gold mine.

The bill to incorporate the Toronto Free Hospital for Consumptives has been forwarded to the Legislature, with a favourable report, by the Private Bills Committee. A clause was introduced into the legislation making obligatory the forwarding of all plans for a new hospital building to the Provincial Secretary for submission to the Provincial Board of Health. Another amendment made it possible for municipal corporation to contribute to the support of the institution. The directors are: W. J. Gage, W. A. Charlton, H. P. Dwight, H. C. Hammond, J. L. Hughes, R. H. Davies, Ambrose Kent and W. Lloyd Wood.

Reviews and Notices of Books.

THE EXAMINATION OF THE FUNCTION OF THE INTESTINES BY MEANS OF THE TEST-DIET.—Its Application in Medical Practice and its Diagnostic and Therapeutic Value. By PROF. DR. ADOLF SCHMIDT, Physician-in-Chief of the City Hospital Friedrichstadt in Dresden. Authorized Translation from the latest German

Edition, by CHARLES D. AARON, M.D. Price, $1.00, net. F. A Davis Company, Philadelphia.

This is a well-considered monograph upon an important subject. It sums up the author's experience for a period of eight years and aims to do for the intestinal canal, what has already been done for the stomach. The amount of work which it represents is amazingly large

SAUNDERS QUESTION COMPENDS: ESSENTIALS OF GENITO-URINARY AND VENEREAL DISEASES. By STARLING S. WILCOX, M.D., Starling Medical College, Columbus, Ohio. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, $1.00 net.

This little work is a worthy addition to Saunders' Question-Compend Series, a series that has reached a sale of over 265,000 copies.

A LABORATORY MANUAL OF PHYSIOLOGICAL CHEMISTRY. By ELLIOT W. ROCKWOOD, M.A., M.D., University of Iowa. Second Edition F. A. Davis Company, Philadelphia, Pa.

This is a well arranged course. A student who follows it will acquire all the knowledge and experience which is necessary for him.

THE SCIENCE AND ART OF PRESCRIBING. By E. H. COLBECK, B.A., M.D. (Cantale) AND ARNOLD CHAPLIN, B.A., M.D. (Cantale.) Grand Edition. Henry Kimpton, London, 1906.

This is in effect a reproduction of the first edition, though certain errors have been rectified and some sections amplified. It is a most useful book for students who desire to learn the art of prescribing, and for physicians who still practice that art, and do not surrender themselves to ready-made formulæ.

AIDS TO SURGICAL DIAGNOSIS. By H. W. CARSON, F.R.C.S. Price $1.00. London, Bailliere, Tindall & Cox, Canadian agents, J. A. Carveth & Co., Toronto.

This little book will, as the author hopes, "prove of service to those for whom it is written."

NURSING IN THE ACUTE INFECTIOUS FEVERS. By GEORGE P. PAUL, M.D., Troy, New York. 12mo of 200 pages, illustrated. Philadelphia and London: W. B. Saunders and Company, 1906. Price $1.00 net.

The author has divided his work into three parts: The first treats of fevers in general; the second of each fever individually; the third

deals with practical procedures and information necessary to the proper management of the various diseases discussed. Much of this information is of value to physicians as well as nurses.

THE OPERATING ROOM AND THE PATIENT. By RUSSELL S. FOWLER, M.D., Surgeon to the German Hospital, Brooklyn. Octavo of 172 pages, illustrated. Philadelphia and London: W. B. Saunders Company, J. A. Carveth & Co., Toronto, 1906. Cloth, $2.00 net.

This book deals with the procedure of the operating room, sterilization and preparation of patient, materials and instruments. The operating surgeon will find it of value, as it furnishes him a guide to which he may readily add his own variations of technique.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION, Vol. XXIII. Edited by RICHARD H. HARTE, M.D., 1905.

This volume of the Transactions contains the papers which were read before the American Surgical Association at the meeting held in July, 1905. It contains twenty-three important papers on surgical subjects. The volume is illustrated by 21 plates, one coloured and several figures.

DISEASES OF THE EYE. A Handbook of Ophthalmic Practice. By G. E. DESCHWEINITZ, M.D., Fifth edition, revised and enlarged, 1906. Published by W. B. Saunders Co., Philadelphia and London. J. A. Carveth & Co., Toronto, Canadain Agents. Price, cloth $5.00; half moracco, $6.00.

The fifth edition of this well-known text-book shows evidence at every point of painstaking and studious revision. The work, which, as a whole, forms an attractive volume, can be unreservedly recommended as a clear, interesting, and sound exposition of present-day ophthalmology.

Medical News.

ROYAL VICTORIA HOSPITAL.

Report for the month of March: Patient admitted, 269; discharged, 263; died, 19; medical, 89; surgical, 114; ophthalmological, 22; gynaecological, 34; laryngological, 103. Outdoor department:—Medical, 987; surgical, 713; eye and ear, 368; diseases of women, 142; nose and throat, 565. Total, 3,775. Ambulance calls, 88.

SOCIETE MEDICALE DE MONTREAL.

Meeting of March 20th, 1906.

The president, Dr. Boulet, occupied the chair. The following members were present: Drs. Cleroux, Hervieux, Larin, Marien, Mercier, Asselin, de Martigny, Dubé, Roy, Valois, Plourde, Masson, Bourgouin, Racitot, Rousseau, Handfield, Desmarais, Lebel, Laramée.

Dr. St. Jacques presented living cases in which he had employed metallic suture for fractures.

Dr. Boulet read an appreciation of the life and work of Dr. de Vecker, of Paris, and a resolution was passed expressing the sense of loss which ophthalmological science had sustained in his death.

Dr. St. Jacques showed a specimen of gangrene of the hand following thrombosis of the axillary artery, and a tumour of the kidney. Dr. St. Jacques also gave two case-reports upon cancerous degeneration of sebaceous cysts.

Dr. Oscar Mercier reported an interesting case of rupture of the vagina.

ST. JOHN BRANCH OF B. M. A.

At a meeting of the medical men of St. John, held on 28th March, it was decided to form a St. John, New Brunswick, branch of the British Medical Association and to apply to the general secretary of the association for such charter.

Dr. Murray MacLaren was elected chairman and Dr. J. H. Scammell secretary. The chairman stated the purpose of the meeting and detailed the advantages of such affiliation. Dr. Thos. Walker moved that the meeting declare itself in favour of forming a branch of the British Medical Association and that those present pledge themselves to become members of the new branch. Dr. Emery seconded the motion and it was carried unanimously. Dr. G. A. B. Addy moved that the secretary obtain the names of those willing to join and to forward these to the general secretary. The signatories were: Dr. Thos. Walker, Dr. S. S. Skinner, Dr. D. E. Berryman, Dr. J. H. Gray, Dr. G. B. Addy, Dr. Wm. F. Roberts, Dr. M. MacLaren, Dr. P. R. Inches, Dr. F. L. Kenny, Dr. Jas. Christie, D. J. F. Bentley, Dr. A. F. Emery, Dr. W. T. McVey, Dr. L. A. McAlpine, Dr. T. D. Walker, Dr. W. L. Ellis, Dr. J. H. Scammell.

In addition to these names the application will contain signatures of nearly all the other practitioners in the city, as the idea is very

generally favoured by the profession. Dr. McAlpine then moved that the name of the branch be the St. John, New Brunswick, Branch of the British Medical Association. This was seconded by Dr. Ellis and carried.

Dr. A. Thompson, of Strathroy, died of heart failure on March 31st, in the 70th year of his age. He was a member of the Provincial Board of Health.

Dr. S. B. Smale, one of the oldest physicians in the county of Huron died at his home in Wroxeter after a few days illness with pneumonia. Deceased was well known and very highly respected and enjoyed a very large practice. He had resided in Wroxeter for upwards or thirty years.

Dr. J .W. Moke died at McGregor, Essex Co., on April 8th. He was a graduate of Toronto University, and was 31 years of age.

During the month of March 259 patients were admitted to the Montreal General Hospital, and 238 were discharged. There were 13 deaths, six of which occurred within three days of admission. The average daily sick in the hospital was 198, and the highest number of any one day, 209. Outdoor consultations numbered 4,318, an increase of 361 over the previous month. The ambulance made 109 runs in response to calls. The average number of visitors at the hospital on visiting days was 252.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

WILLIAM B. COLEY, M.D.—Late results of the Treatment of Inoperable Sarcoma by the Mixed Toxins of Erysipelas and Bacillus Prodigiosus. *Amer. Jour. Med. Sc.*, March 1906.

This paper gives a more or less detailed account of the writer's experience with the mixed toxins in the inopperable cases of sarcoma. In all, 96 cases are tabulated, 36 being his own and 60 those of surgeons reported to him. The results obtained so far in the personal cases show 5 well in less than one year, 4 well from one to two years, 3 from

two to three years, 5 from three to five years, and 21 from five to thirteen years, and of these 21, ten were well over ten years. Of the cases treated by other surgeons 12 remained well less than a year, in 6 the tumour disappeared and the patient was well from one to two years, and 9 from two to three years, in 12 from three to five, in 10 from five to twelve years. 5 cases recurred within periods of from six months to two years, and 2 died during treatment. From this we see that no less than 53 out of 96 cases regarded as absolutely hopeless and inoperable, were well from three to twelve years. The results show that the mixed toxins are much more efficacious in sarcoma than in carcinoma but he believes his experience justifies advising their use as a prophylactic after primary operations for carcinoma as well as for sarcoma. He would also employ preliminary toxin treatment in nearly all cases of sarcoma of the extremities before resorting to amputation. The following suggestions are given for the administration of the toxins. Always begin with a minimum dose, for the reason that individual susceptibility varies much and the more vascular the tumour the more severe the reaction. For local injections (into the tumour) the dose should be ¼ to ½ minim, for interstitial (remote from tumour) one minim. This dose should be gradually increased until a chill occurs (½ to 2 hours after injection) followed by a temperature of 101° to 103° or 104°F. If there is much depression following the reaction and the patient's general condition is not very good, it is wiser to give the injections every other day, but if the patient can bear daily injections the chances of success are much greater. In cases where the tumour is situated in some region where injections are difficult or dangerous, such as the pelvis or abdomen, it is better to give systematic injections into thigh, buttocks or abdominal wall. If the tumour becomes soft and fluctuating, it is better to open these areas, establish drainage and treat with moist antiseptics. A good tonic, preferably iron, quinine and strychnine should be given during treatment, and careful attention should be paid to keeping the bowels free. In successful cases a marked improvement is usually noted within one to four weeks. If no improvement has occurred at the end of four weeks of vigourous treatment, the chances are that none will occur, and little is to be hoped for more than a retardation of growth, and it may be wise to abandon the treatment or lessen the dose to the point of not making the patient uncomfortable by reason of chills. If there is improvement, the treatment should be continued until the tumour has totally or nearly disappeared. In some cases treatment has been continued in small doses more than a year, the patients are now well many years after cessation

of treatment. When the sarcoma has become generalized, as shown by the presence of distinct metastases the prognosis is naturally much more grave, and formerly he advised against the use of the toxins. There have been certain reported cases and some in his own experience, which have shown wonderful improvement, so that now he holds that no case is so desperate as not be worthy of a trial of the treatment. He has, however, had no permanent success in cases of extensive generalization or in melanotic sarcoma.

JOHN H. GIBBON, M.D.—The treatment of Diffuse and General Peritonitis, with Special Reference to the Murphy Method. *New York Medical Journal*, April 7, 1906.

The treatment of general peritonitis is probably one of the most discussed subjects in surgery at the present time. On one extreme we have Ochsner who does nothing in the way of operative interference, on the other we have Price, who thoroughly irrigates the entire peritoneum. Occupying a position between these two extremes we have what is now known as Murphy's treatment which consists essentially of opening the abdomen at once, looking for and removing the cause of the inflammation, and thoroughly draining the abdominal cavity with the least possible disturbance of the viscera. And along with this we have the best operative treatment which consists in elevating the patient's thorax to at least thirty-five degrees (Fowler's posture) and the administration of a quart of salt solution every two hours per rectum to aid drainage, overcome shock and aid elimination. The writer reports eight cases of general peritonitis so treated. Six cases were caused by the appendix, one by typhoid perforation, and one by perforated gastric ulcer. The typhoid died, the parents refusing operation until thirty hours had elapsed. The gastric case was operated upon four hours after perforation and recovered. There were six cases due to appendix, with two deaths. Of these one had septic thrombosis of the meso appendix and gave every prospect of recovering up to the fifth day when he developed symptoms of pulmonary embolism. No post-mortem was allowed. The other was profoundly septic and died twelve hours after operation.

The writer prefers gauze to rubber tube for drainage, but gives no reasons for his preference.

EDMUND OWEN, F.R.C.S.—"Reducible Inguinal Hernia in Boyhood." *The Practioner*, March 1906.

We have presented to us in a most charming manner a general consideration of this subject. The contrast between the South Sea Island

baby, who is put into the water to swim long before he can walk or stand, or between the Zulu boy, the offspring of a splendid physical stock and the children of modern European parents, taking little exercise, leading an indoor self-indulgent life, makes it of small wonder if the muscles of the inguinal canal are of such poor fibre as to offer but the mildest hindrance to the descent of a congenital hernia. The important part that improper feeding plays both in the production and in connection with the palliative treatment of hernia in children is dwelt upon. Attention is also drawn to the matter of proper micturition. As regards treatment. Many hernia can be cured by the intelligent and unwearying use of a thick skein of wools, others, having a larger peritoneal aperture require a truss, but it is only by an operation that one can be absolutely certain that the communication with the abdominal cavity has been shut off. It is on this account that one is the more inclined to advise operation since an unobliterated funicular process is a snare of the utmost danger. But whether the radical or palliative treatment be employed it is essential that the child should be put to bed with his pelvis raised. In this connection it is of interest to note that Percival Pott, a hundred and thirty years ago, at a time when prompt incision was not the order of the day, gave the following advice for the treatment of strangulated hernia. "The posture of the body and the disposition of the lower limbs may be made very assistant in this operation, when the difficulty is considerable, the nearer the posture approaches to what is commonly called standing on the head, the better, as it causes the whole packet of small intestines to hang, as it were, by the strangulated portion, and may thereby disengage it." A form of treatment we have found useful on more than one occasion. Regarding the procedure for the radical cure he holds that the first essential is that the sac should be pulled well down and ligated high up and believes that in children this alone would give a cure in 95 per cent. It is to safe-guard the other 5 per cent that he puts in sutures, usually of silk or silk worm gut, which bring the conjoined tendon down to Poupart's ligament. He does not believe in transplanting the cord, and is very much against separating the flaps of the external oblique as is done in the Bassini operation. He is also opposed to twisting the sac as it is unsafe to twist where one cannot feel. His rule is to keep the boy three weeks in bed, and three weeks on the sofa. As regards wearing the truss after operation he advises, as a rule, that the boy wear his old truss for a few weeks, provided the spring is not too strong, as it acts as a sort of reminder to him that he is not yet strong enough to bear all the strain which in his boyish, thoughtless way he might be apt to put upon it.

T. Stanmore Bishop, F.R.C.S. Eng.—"On Biliary Calculi." *Lancet*, March 24th, 1906.

Cases of gall-stones may be primarily divided by a broad line into those which are associated with inflammation and those which are not. Theoretically, this position is open to question, since the presence of gall-stones presupposes inflammation, but clinically the division is of practical value as it is only when inflammation accompanies gall-stones that we have symptoms which call for relief. These inflammatory conditions may be super-acute as in the ordinary biliary colic, subacute where the symptoms are not referable to the biliary tract but rather reflex ones pointing to gastric or intestinal conditions. Ten cases are cited as showing the difficulty in making a differential diagnosis in this last group. The writer regards Murphy's test of more importance than that of Mayo Robson for detecting tenderness in contracted and deeply seated gall bladders. He holds that cholecystotomy and choledichotomy as at present carried out are eminently safe operations, and would limit excision of the gall bladder to those cases of gangrene.

W. L. B.

MEDICINE.

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

J F. Binnie. "Hepatoptosis or Floating Liver." *Am. Jour. Med. Sc.*, April, 1906.

This condition is one which is seldom recognized, although undoubtedly much commoner than is usually supposed. Einhorn states that he personally saw 30 cases in five months, or in 3.5 per cent of patients consulting him for digestive troubles. Ferrier agrees with Glenard that the affection is of frequent occurrence.

The etiological factors vary. The writer does not consider that tight lacing produces the condition, but on the contrary a well-fitting corset is a useful method of treatment.

Increased weight of the organ may be the cause of ptosis, but it is difficult to estimate as it is so frequently associated with malnutrition, itself a factor of undoubted importance in the production of ptosis. Cholelithiasis and cholecystitis may possibly precede the development of ptosis, but the relationship is at present somewhat obscure. It may prove that these conditions are the result rather than the cause of

ptosis, or ptosis may be the result of the associated malnutrition. The ligaments of the liver and the vena cava afford a considerable degree of support to the organ, and Faure has shown experimentally that the organ is more readily dragged down after division of the ligaments.

Lack of support by the intestines and abdominal walls is of more importance in maintaining the organ in situ than is suspension by the ligaments. The most important immediate cause of ptosis is relaxation of the abdominal wall, resulting from pregnancy or other forms of abdominal distension. Malnutrition operates by relaxing the abdominal walls, in the removal of supporting abdominal pads of fat and in allowing of stretching of the abdominal ligaments.

Hepatoptosis is invariably associated with ptosis of other organs, resulting from similar causes.

The symptoms vary with the degree of the affection, and in many cases are entirely absent. Digestive disturbances are frequent, constipation and tympanites being usually present. Pain is often severe, but is more liable to be indefinite. Gueniot has observed a dragging pain behind the upper end of the sternum, due to the tension on the diaphragm, and through it on the mediastinal structures. Ascites and jaundice are infrequent. The diagnosis rests on physical signs. In some cases a mobile tumour is felt, corresponding in shape and dimensions with the liver; it is dull on percussion and the normal site of the liver is resonant. By manipulation the organ may sometimes be replaced. In slighter degrees the organ may be felt during inspiration by grasping the abdomen below the costal border between the thumb in front and the fingers of the same hand behind.

Treatment must be directed toward improving nutrition and increasing the strength of the muscles by suitable exercises and massage. A suitable belt or corset prevents further displacement by affording support to the organ. In severe cases surgical intervention may become necessary.

A. Ernest Jones. "The Onset of Hemiplegia in Vascular Lesions. *Brain*, 1905.

This article is based on the fatal cases occurring at University College Hospital for a period of sixty-five years.

Vascular lesions only have been recorded. In all there were 160 lesions occurring in 139 patients; 123 were cases of hæmorrhage, 24 of thrombosis and 13 of embolism.

It is now recognised that it is exceptional for any of these lesions to occur during great exertion, a feature which Gintrac series of 840 cases, made 50 to 100 years ago, amply establishes.

The symptoms of onset. Nausea and vomiting were frequent at the onset of cerebral hæmorrhage, and comparatively uncommon in other vascular lesions. Twitchings and convulsions were more frequent at the onset of occluding lesions, and especially when the cortex was affected. General convulsions occurred in nearly one third of the embolic cases. Convulsions may occur in hæmorrhage apart from meningeal or ventricular bleeding, but are more common under these circumstaces.

Loss of consciousness is more frequently noticed in hæmorrhage than in occlusion

In the present series the following figures bears out this view. This symptom occurred in over 80 per cent of cases of hæmorrhage, in thrombosis 45.5 per cent, and in embolism 46.1 per cent.

Unconsciousness is more frequent in intra-ventricular hæmorrhages than in others, but its noteworthy that consciousness was retained until near the end in four cases of the former condition.

An apoplectiform onset, whatever its cause, increases the gravity of the prognosis. Of the extra-ventricular hæmorrhages more than twice as many died of the immediate attack when the onset was apoplectiform.

The immediate prognosis is much graver with hæmorrhage than with softening. In a series of 109 cases of hæmorrhage 72.5 per cent died within a week, the numbers being about 30 per cent for the two forms of softening in the same period. On intra-ventricular hæmorrhage nearly 60 per cent of the patients died in the first 24 hours. One patient lived forty minutes, another thirty, and one only fifteen, recalling Abercrombie's case that proved fatal within five minutes. Two patients lived for a month and one for six weeks presenting post mortem evidence of a clot in the ventricles throughout.

Of the extra-ventricular cases, the one running the most rapid course proved fatal in ten hours. Mushet has published a case of this nature that died in thirty minutes, so that a rapid termination is not confined to ventricular hæmorrhages.

In thrombosis early death is certainly rarer than with hæmorrhage, but about the same percentage prove fatal in a month.

In embolism the problem is complicated with a cardiac lesion, which is usually the direct cause of death. In a surprising number of cases malignant endocarditis, previously unrecognized, has been found at autopsy. The mortality is decidedly less than thrombosis.

There is no indication that hæmorrhage affects one side of the liver oftener than the other, and even in embolism it cannot be stated with certainty which side is most frequently attacked.

GEORGE M. GOULD. "A Biographic Clinic on Gustave Flaubert." *Medical Record,* April 14th, 1906.

Dr Gould epitomizes his article as follows: Flaubert from boyhood to the day of his death was the victim of unrecognized eyestrain. His epilepsy typical or atypical, his "nystero-neurasthenia," his "migraine," or whatever name be given his symptoms, was the glaring consequence of abuse or overuse of slightly astigmatic or otherwise ametropic eyes. The mental and moral shock of the discovery led to his morbid seclusion and unhygienic life, but every indication points to a control of epileptic tendency by means of opium. This unhygienic life was partly offset by the violent "exercise" that Flaubert habitually took in his study, by means of howling, declaiming, stamping, walking, and so on. This regime met with three compensations: 1. Ocular rest; 2. excitations of the emotions and mind to overcome the inhibition of eyestrain; 3. muscular exercise. The writer concludes by emphasizing the effect of eyestrain in its wrecking power on the character, intellect, and will of this writer.

W. E. DEEKS, M.D. "Suggestions on the nature and treatment of Rheumatism." *New York Medical Journal,* March 3rd, 1906.

Dr. Deeks gives a summary of the views which are held upon the aetiology of Rheumatism briefly as follows:

Cullen's theory. He believed that rheumatism was due to the direct influence of cold on the joint structures, the coverings of which were so thin that they were unable to protect the deeper tissues.

Nervous theory. This was suggested and advocated by J. K. Mitchell, and in a modified way accepted by a number of well known physicians.

Friedlander's theory. He believed that the lesion was located in the medulla near the nuclei of the vagus and glossopharyngeal nerves and that the articular lesions are but the peripheral manifestations.

Embolic theory. Heuter suggested that the disease was due to a micro-organism which first invaded the endocardium producing endocarditis and from this emboli were distributed throughout the circulation to the parts affected.

Miasmatic theory. This was advocated by Saunders, Haygarth, Maclagan, and others. They believed that the poison was closely allied to malaria in its manifestations.

Infective theory. More recently this has been widely advocated because of the presence in the lesion of a diplococcus. It is claimed that

the lesions resemble pyæmia in their distribution, but differ in that they do not go on to suppuration. Later on this will be referred to in greater detail.

The lactic acid theory has had more advocates than any other. It originated with Prout who claimed that the rheumatic poison was lactic acid and originated as a chemical poison from the perversion of some nutritional process. Lactic acid is a product of tissue metamorphosis, and is produced during muscular activity. It may be excreted unaltered or become oxidized into carbon dioxide and water. Its adherents believe that chilling of the skin arrests sweat excretion and consequently elimination of lactic acid. Profuse perspiration is an effort of system to throw off the poison. This theory was opposed by such men as Garrod, Bouchard, Fuller, Maclagan, Salomon, etc. The strongest evidence in its support, however was that adduced by Sir Walter Foster in 1871. He administered small doses of lactic acid to a patient suffering from diabetes mellitus and immediately set up an acute attack of rheumatism. The rheumatism subsided with the cessation of the administration of the lactic acid and recrudesced when it was again given.

Neurochemical theory. This was advanced by Dr. Latham as a modification of the lactic acid theory. He thought that exposure to cold caused constriction of the cutaneous vascular areas and reflexly through the vasomotor system corresponding dilation of the vascular areas of the muscles and of the viscera, thus increasing molecular transformation in their substances. Products of muscular metabolism are lactic and glycolic acid, and these passed into the system unoxidized. Latham believed that uric acid is the actual poison both in rheumatism and gout, but that in rheumatism the phenomena are modified by the presence of lactic acid in addition.

In the observation of cases of rheumatism of all forms, the writer was confronted with their invariable association with some stomach disorder of hyperacid or fermentative type. Although frequently the patient denied that he was a sufferer from stomach trouble, still a careful symptomatic history would reveal its presence. The discovery of this relationship led to the investigation of a series of related diseases, tonsilitis, iritis, pleurisy, etc., for the presence of the same factor, with invariably the same result. The conclusion was then drawn that probably the condition of the stomach was the primary factor, or at any rate was an antecedent feature, in the causation of rheumatism and prepared the way for the invasion of some specific organism.

If this were true then it would be necessary, Dr. Deeks argues, in all cases of acute and chronic rheumatism to first get rid of fermentative

processes in the stomach before treating the organ or tissue affected, if permanent results were to be obtained.

In view of the above considerations, the author claims, a rational treatment for subacute and chronic rheumatism and one invariably giving good results if carefully adhered to, is treatment directed towards the relief of stomach symptoms in the first place. From the diet should be excluded absolutely for a time sugar and potatoes; and bread should be greatly limited, particularly toast. If fermentation still exists the administration for a few days of dilute nitric acid in twenty drop doses well diluted before meals; or if constipation be present, rhubarb and soda after meals is indicated. Some one of the salicylic acid series internally, such as sodium salicylate, etc., in physiological doses should be given; and finally the administration of counter irritants and electricity, either static sparks or high frequency currents.

Dr. Deeks gives no evidence as to the value of electricity—nor does he offer any suggestion as to why it should be beneficial in rheumatism.

F. C. Shattuck. "Diet in Nephritis." *Journal A. M. A.*, January 6th, 1906.

Dr. Shauttuck lays down the following as the principles pertaining to the dietetic treatment of nephritis: 1. Such control as we may have to-day of nephritis lies in diet and mode of life rather than in drugs. 2. Such drugs as are useful are so in their effect on the general organism and the heart rather than on the kidneys directly. 3. In all cases of nephritis the main aim is to spare the kidneys unnecessary work, remembering that the urinary system is but one, of the many, making up the body. 4. In acute nephritis, as well as in the acute exacerbations of the chronic forms, Doctors, Diet and Quiet work together. Starvation for a few days, regulated by the intensity of the process and the strength of the patient, is the keynote here. In the chronic forms the aim is to lighten and to lengthen life. Especially in the contracted form of kidney disease, many years of life and comfort may depend on the physician's skill in adapting sound principles to the particular case and in securing the co-operation of the patient in persistently carrying out the directions given. Dietary restriction should, in the main, be quantitative rather than qualitative. Alcohol in moderation is not necessarily a poison and may be an aid to digestion. 6. The excess of proteid, not proteid itself, is harmful to the chronically sick kidney. 7. A varied diet is more likely, than a monotonous one, to promote the making of good blood and improving the general nutrition, and that of the myocardium in particular. 8. The amount of albumin is in itself no guide as to

the extent of dietary restriction. Shattuck remarks the advisability of a relatively dry diet in dropsical cases, proportioned to the degree of dropsy. In cases of contracted kidney, even without dropsy, he thinks physicians have erred in forcing water, and that the main service von Noorden has rendered is in advocating the limitation of liquids.

THOMAS CLAYTON, M.D., "A More Liberal Diet in Typhoid Fever." Medical Record, March 17th, 1906.

The writer's treatment of a case of typhoid fever, no matter what day of the disease it may come under his care, is as follows: The regulation six onces of milk are given every two hours, night and day, while the patient is awake. In place of milk, in order to vary the monotony for those who can take milk, and as a substitute for those who can not, animal broths are given. After the subsidence of the more acute symptoms, the patient is asked if he is hungry, and if he replies in the affirmative a soft-boiled or poached egg is allowed, and if well borne the number is gradually increased to three or more a day. Jelly or blancmange, custard, soft toast, the soft part of baked apple, and rice which has been boiled four hours, are the next additions. After this, scraped beef or chop, very finely divided chicken, and baked potatoes are tried. The writer does not advocate so full a diet in every case, for each patient must be carefully studied as an individual. He believes that most of the foods mentioned are quite as digestible, far more palatable, and rather less likely to cause perforation or hemorrhage by their local action, or gas production than milk. The writer appends a table of twenty-six cases. These patients all recovered. He adds that the advocates of more liberal diet claim that the patient is more comfortable, the attack is slightly shortened, convalescence is more prompt, and relapse, hemorrhage, and perforation are not more frqeuent.

ELI MOSCHOWITZ. "A New Method of Treatment of Acne." *Medical Record*, January 16th, 1906.

Eli Moschowitz has applied Biers' principle of hyperemia to the treatof acne and reports very good results. The procedure consists in the application of dry cups to the affected region for one-half hour, once or twice a day. The suction must be very slight and the cup is removed and applied every one or two minutes. It takes from two to five sessions for each area to effect the desired result. The method does not prevent the appearance of new pustules although they become less frequent. Eight cases were treated by this method alone with satisfactory improvement.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The thirteenth regular meeting of the Society was held Friday evening, April 6th, 1906, Dr. F. R. England, President, in the chair.

EXCISION OF THE LACRIMAL SAC.

Dr. F. T. Tooke exhibited two patients upon whom this operation had been performed. A full description of the procedure will be found on p. 336 of this number of the JOURNAL.

J. M. ELDER, M.D.—I would like to ask Dr. Tooke how, if the tear duct is entirely obliterated and filled up with cicatricial tissue, and the lacrimal gland still being left, epiphora does not occur? What becomes of the lacrimal secretion?

W. G. M. BYERS, M.D.—I was greatly interested in Axenfeld's operation as described to me first by Dr. Tooke; and I decided when the occasion arose to ask him to put into practice the extensive experience of this procedure which he had acquired under Professor Axenfeld in Freiburg. The results as seen by the cases presented here to-night are entirely satisfactory. I have performed excision of the lacrimal sac in the old way on quite a number of occasions, and with uniformly good results; but I am convinced of the superiority of this newer method. The Axenfeld procedure offers a larger field of operation, and, what is of more importance, a practical certainty of removing the sac in its entirety. I congratulate Dr. Tooke upon the success of his cases; and I am personally grateful to him for instruction in the technique of this important operation.

F. T. TOOKE, M. D.—With regard to Dr. Elder's question I am afraid that I can only say that he appreciates reparative adaptability of nature as well as I do. It is simply one more case where natures adapts itself to circumstances; if the gland does not secrete as much as it formerly did, it is simply appreciating the conditions that exist and acting accordingly.

PULMONARY GANGRENE AND ABSCESS.

RIDLEY MACKENZIE, M.D., read a paper upon pulmonary gangrene and abscess.

G. E. ARMSTRONG, M.D.—The difficulty in differentiating between abscess, gangrene and bronchiectasis, is sometimes very great and from

my experience in the General Hospital I can say that sometimes even with the greatest care one may be led astray. The presence of elastic tissue, so far as my experience goes, is a very good evidence in favour of gangrene and rather against the condition being one of bronchiectasis. The odour is sometimes "gangrenous" in bronchiectasis and sometimes absent in gangrene, depending upon fetid change and a mixed variety of infection. The presence of elastic tissue is evidence in favour of gangrene and its absence that the case may possibly be one of bronchiectasis rather than of gangrene of the lung, even if the odour is just as bad as it is possible to be. The method of operating has been pretty well worked out and is now established on fairly definite lines. Exception has been taken by some writers to the aspirating needle in these cases claiming that it may be followed by infection of the pleura. I do not know that I have any direct evidence to give on this but I think it may be assumed that if the surfaces do not happen to be adherent at the time an infective pleurisy may be set up. The difficulty of determining whether the pleural surfaces are adherent at the time of operation is very considerable. In more than three fourths, probably 80 per cent of the cases that I have operated upon the pleural surfaces have been united and adherent so that one could go directly into the lung cavity without infecting the pleura. Sometimes one is not sure and if time is not urgent, if there is any doubt—if it feels thin—it is just as well to put in a row of sutures around the opening where the rib has been resected and then in 72 hours the two surfaces have become sufficiently united to enable one to go into the cavity without infecting the pleura. This is not always possible as patients come into the hospital in a condition where one is not fully justified in making any delay. If one can get directly through into the cavity without infecting the pleura it is very much more desirable; but if the accident does occur it is not always a terrible calamity. Previously I went with very great care through the cavity with a thermo-cautery but a very much safer way which I have come to now is by passing first a director through the thickened layers of the pleura and dilating with small forceps, then substituting a larger pair, and finally passing in the tube. In bronchiectatic cases I find a very good way is to pack with iodoform gauze, which seems to answer very well, then afterwards a tube is placed in to make less trouble in dressing. The one difficulty I have had is that of getting sufficient drainage. The abscess cavity very often has a large opening into a bronchus just about its top and if a good deal of lung happens to lie over the lower part of the cavity one may get into the upper part of a large cavity. Where there was a large

opening into a bronchus just within ½ inch of the top of my opening into the cavity, in one case, the patient improved and the chronic condition remained with a sinus and I subsequently had to make a second opening and then the progress towards recovery was very much more rapid and ultimately quite satisfactory. There are cases reported of this bronchiectatic condition, apparently localised and affecting the branches of one bronchus, which are so extremely fetid that they are an offence to everybody, and where an operation as usual for abscess or gangrene has proved most satisfactory. Konig has reported two such cases where by drainage he has made these people fairly comfortable both to themselves and to those about them. In addition it is to be noted that the earlier these cases receive drainage the better, before the cavity has become thickened and before the walls are so thick that they will not collapse. Sometimes it is adherent to the chest wall preventing contraction and at other times it would seem as if the pericardium formed one wall. In one case this was so, at the operation there was a space which did not seem as if it could close except by the heart coming over or by excising a portion of the rigid chest wall. I think the earlier these cases are done the better so far as the ultimate closure of the cavity is concerned.

F. G. FINLEY, M.D.—I have been very much interested in Dr. MacKenzie's paper as I have seen a considerable number of the cases he has recorded. It is a very difficult matter to draw a sharp line between gangrene and abscess; distinctions have been laid down in a broad sense but these do not always hold. I have been rather struck by the number of cases of abscess which occurred in alcoholic individuals; in one case there was alcholic epilepsy and it was following one of these seizures that signs of abscess developed, the inference being that it was really an inhalation process which set up the suppurative process. In another case a similar mechanism occurred in a young woman who was brought into the hospital for a series of epileptic seizures. The autopsy showed numerous abscesses lying in broncho-pneumonic patches. So far as the recognition of these cases go they are sometimes extremely difficult to localize. In one case the X-Ray gave the first clue to the localization of the lesion; there was a distinct shadow on the plate, and later on the abscess pointed in the back. I have occasionally found it difficult to distinguish between a localised empyema and an abscess, and in one or two cases only operation has led to a diagnosis. So far as treatment goes the medical treatment is most unsatisfactory and certainly as early as we can fix the site of the abscess or a gangrenous area and the patient's condition warrants it, surgical measures should be resorted to without delay.

J. M. ELDER, M.D.—I just wish to emphasize one point which Dr. Armstrong made in the surgical treatment, and that is the necessity of early intervention. In one of the first cases I saw I had that forced upon me very well. It was a case of abscess in one of the nurses at the Montreal General Hospital. A diagnosis was made and we decided that we would operate at one o'clock. At 12 o'clock, pus rushed from the nostrils and the mouth, and she died at once, having been practically drowned. This danger is one of the things one should consider as liable to occur from the rupture of the abscess. With regard to the aspiration cases, I think a very great majority of them are secondary to bronchiectatis conditions. But I remember another case, where abscess of the lung developed, apparently following upon operation for ligature of hæmorrhoids in a young woman. Previous to operation there had been no evidence of any lung trouble at all, but in ten or twelve days she began to develop high temperature, and eventually an abscess of the lung was made out by the physician. I removed the rib and got at the abscess ,and she got better. It does seem then, that these abscesses are sometimes embolic.

J. ALEX. HUTCHISON, M.D.—I was very much interested in Dr. MacKenzie's paper, as it is a subject which has not been brought before the Society for some time past. One case I had where I drained the upper part of the lung from behind following excision of the tongue; it was a very malignant condition involving the floor of the mouth and where operation was not done hoping to save the patient's life but merely to remove the foul-smelling mass. Although drainage of the cavity was kept up the patient succumbed; he was alcoholic. I recall to my mind a case where gangrene was the fatal result after ligation of hæmorrhoids. Long ago it was recognized that this condition did supervene upon ligation of hæmorrhoids. Then it was considered that the thermo-cautery was the best measure. In the case of Dr. MacKenzie's where I was associated with him, when I opened the cavity and drained it the man was almost moribund and I did it as a dernier resort; I met him on the street yesterday and he is perfectly well.

A. R. PENNOYER, M.D.—I have had the privilege of watching some of Dr. MacKenzie's cases and have had two or three in my own private practice. Some points in connection with the difficulty in diagnosing some of these abscesses have not been emphasized enough. One of my cases I had some two years ago following a frank lobar pneumonia, the patient was a strong healthy fellow and apparently making a steady convalescence, when in a few days he started a septic temperature and became extremely ill, the still dull condition in the lung obscured the

signs of abscess and my consultant had about concluded that we were dealing with malignant endocarditis when the diagnosis was cleared by the patient coughing up 40 or 45 oz. of pus of a most foetid odour. That it was not from a ruptured empyema was shown by failure on several attempts to get positive results with an exploring needle and also from subsequent events. The man is quite well now without further interference. Another case I had six years ago, following a pneumonia of an influenzal type two years previously. She had been spitting up pus ever since, without severe septic trouble only general deterioration in health, the diagnosis was possibly a localized empyema, ruptured into a bronchus. On excising a piece of rib I found I had no empyema at all, but that the conditions was within the lung, which I could easily determine both from the distance to which I had to pass the needle and from anatomically demonstrating the layers of pleura. I opened through here and did what I should never do again, namely, introduced my finger into the cavity and broke down everything much as I would in dealing with a breast case, I nearly lost my patient from hæmorrhage, after a few days, however, her recovery was progressive and ultimately complete.

F. R. ENGLAND, M.D.—One case comes to my mind which offers a good example of the difficulty which may attend the diagnosis. When the Canadian Medical Association last met in Montreal, one of our medical friends from the West attended the meeting; he had been troubled for over a year with chest symptoms, irritating cough, shortness of breath, etc., which he attributed to a piece of chewing gum which he thought he had accidently inhaled during sleep. He had been in the habit of chewing gum at night after going to bed. One morning when he awoke the gum was missing and he experienced some discomfort about his chest and had an irritating, harassing cough. His chief reason for coming to Montreal was for advice and treatment. He consulted some of our leading clinicians, who after careful examination informed him that his symptoms were in all probability due to an aneurysm. He returned to his home; all the symptoms became aggravated and he finally underwent an operation for abscess of the lung. At the operation it was found that the greater part of one lung had been destroyed and unfortunately the termination was fatal. In this case notwithstanding the history, there was apparently a great deal of difficulty in recognizing the true nature of the condition.

RIDLEY MACKENZIE, M.D.—The 14 cases of abscess of the lung were primary abscesses following pulmonary inflammation. In the pathological reports I found a good many cases secondary to carcinoma of

the tongue and operations for maglignant disease in the neck. These I have not reported. Operative procedure is certainly the best means of treating both gangrene and abscess.

CEREBRAL COMPLICATION FROM NASAL DISEASE.

R. H. Craig, M.D., read a paper upon cerebral complication from nasal disease.

Wesley Mills, M.D.—I think on grounds anatomical and physiological alone we are indebted to Dr. Craig for presenting us with some views, which are, if not new, perhaps insufficiently considered. The argument in favour of nasal breathing under ordinary circumstances is certainly I think not thought of very frequently by most of us. If it rests upon really good foundation, and it seems to be nature's arrangement at all events, it deserves practically more consideration than it has been given. With regard to dizziness I think we must remember that there may be very many sources of that peculiar symptom; really any thing that to a very considerable extent disturbs our ordinary experience through the senses is likely to give rise to dizziness so that we are not necessarily bound to an explanation of a purely mechanical kind which seems to be what has occurred to Dr. Craig himself. I can believe that the condition which he emphasizes may in other ways than mechanical ones give rise to dizziness. Altogether this is one of the most suggestive and original papers in the views that are brought together that I have heard or read for a good while.

F. R. England, M.D.—I do not altogether understand the explanation given by Dr. Craig as to how the emptying of the ethmoidal veins depends upon nasal breathing. Dr. Craig, I think, stated that when there is obstruction to nasal breathing, there is in consequence, a poor circulation in the ethmoidal veins and longitudinal sinus.

R. H. Craig, M.D.—In reply to Dr. Archibald's question with regard to dizziness secondary to obstruction in the superior half of the nose. The cases that I have reported are all of a chronic nature. We can readily understand that in acute nasal obstruction such as in acute rhinitis the sensation of dizziness if it is present disappears when the inflammation subsides. With reference to Dr. Mills' remarks, I do not wish to attribute all cases of dizziness to obstruction in the superior half of the nose but simply to draw the attention of the profession to the fact and the advisability of examining the nose in such cases.

I have frequently seen cases of Ménières disease benefitted by breaking down the adhesions between the ossicles of the middle ear and thus bringing about an equalization of air pressure and restoration of the

equilibrium of the labyrinthine circulation. I remember one case in particular upon whom I operated, over two years ago. The patient had been treated by several eminent special surgeons without obtaining relief. She was about fifty years of age and subject to frequent and pronounced attack of ear vertigo associated with deafness and tinnitus aurium. Examination revealed catarrhal otitis media chronica. As the noises and deafness were much pronounced in the left ear I incised the drum membrane, cut the tensor tympani muscle and moved the ossicles freely from within outwards.

A suitable hook was inserted in the opening in the membrane and the ossicles were subjected to the above treatment every other day for a period of two weeks. The tinnitus and dizziness completely disappeared, the hearing power was slightly improved and there has been no recurrence of dizziness since the operation. These cases that I have referred to both nasal and aural, undoubtedly show that by restoring the equilibrium of the circulation at the base of the skull many annoying and disagreeable symptoms can be greatly benefitted and if attended to in the early stages a 'cure' can frequently be promised.

With regard to Dr. England's question, it is rather difficult to answer. The view has recently been advanced by Grunwald and I merely mentioned it.

NEPHRECTOMY FOR MALIGNANT TUMOUR IN AN INFANT.

E. W. Archibald, M.D. and C. B. Keenan.—Dr. Archibald read the clinical notes of this case; Dr. Keenan exhibited the pathological specimen and read the report.

F. R. England, M.D.—I would like to ask Dr. Archibald, in the event of recurrence, which so frequently occurs, whether the recurrence is local, appearing at the seat of operation, or metastatic, occurring in some other part of the body. The hypernephromas, which are generally met with in middle life, have of late been much studied and with great interest by the pathologists; their exact origin is still, I believe, a debatable question. I would like to ask Dr. Keenan if he thinks there is any analogy between the so-called mixed sarcomata of the kidney, generally occurring in very young children, and the hypernephromas; the latter are supposed to be due to displaced suprarenal rests and Dr. Keenan says the former are thought to be due to displaced Wolffian bodies.

C. B. Keenan, M.D.—With regard to the analogy between the two, so-called adeno-sarcomata of the kidney and the hypernephromata: In the hypernephromata we have a reproduction of part of the normal

gland with anaplasia in direct proportion to the malignancy. So we have in these adeno-sarcomata or mesodermata, an attempt to reproduce the structure of the Wolffian body. Of course here as in hypernephromata the more malignant is the tumour the more marked the anaplasia. This does not explain in any way the presence of striped muscle, although one might think this nephorogenic tissue did not cut off clean from the lateral muscle plates and so happened to include within itself a portion of the myotome. I may say both these tumours of the kidney, illustrate this peculiar type of new growth, which one may term "malignant organs."

BRITISH MEDICAL ASSOCIATION.

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PROVISIONAL PROGRAMME.

The following subjects have been selected for discussion.

Tuesday, August 21st.—A discussion on "Blood Pressure in Relation to Disease."

The subject will be treated under the following headings:—(a). Physiological Introduction, by Dr. Dawson, (Baltimore). (b). Clinical Methods of Investigating Blood Pressure, by Dr. A. J. Gibson (Edinburgh). (c). Pathology and Therapeutics of Morbid Blood Pressure, by Sir Wm. Broadbent.

The following will also take part: Dr. MacKenzie, Burnly; Sir James Barr, Dr. Janeway, New York; and others.

Wednesday, August 22nd.—A joint discussion with the Physiology Section on "Over-Nutrition and Under-Nutrition, with special reference to Proteid Metabolism," to be opened by Prof. Crittenden, of Yale.

Thursday, August 23rd.—Papers on "Heart Block," by Dr. MacKenzie, Burnley; Dr. G. A. Gibson, Dr. Erlanger, Prof. Osler and others.

Friday, August 24th.—Papers.

Robert Dawson Rudolf, M.D., M.R.C.P., 396 Bloor st. W., Toronto; John Taylor Fotheringham, B.A., M.D., 20 Wellesley st., Toronto; Robert Hutchison, M.D., 22 Queen Anne st., London, W., Hon. Secs.

Dr. Wm. Osler has suggested that a Clinical Museum, at which rare and interesting cases can be exhibited, should form one of the features at the meeting of the British Medical Association. The secretaries will be glad to hear of any cases that members would care to exhibit, and request members to communicate with them about such cases.