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INTERMITTENT GASTROSUCCORRHEA.

SYNONYMS.—Gastroxynsis (Rossbach); Gastrosuccorrhea Continua periodica (Reichmann); Reichmann's Disease; Paroxysmal Hyperchylia Gastrica.

By GRAHAM CHAMBERS, TORONTO.

This is a somewhat rare affection of the stomach, which is characterized by attacks of excessive secretion of gastric juice, associated with nausea, vomiting, and pain in the region of the stomach. Headache is also a frequent symptom. In the interims between the attacks the patient is usually in perfect health.

Intermittent gastrosuccorrhea is closely related to migraine, periodic vomiting of Von Leyden, and cyclic vomiting in children. It also bears relationship to chronic gastrosuccorrhea, acute attacks or exacerbations of hyperchlorhydria, and the gastric crises observed in tabes dorsalis.

Etiology.—The disease is usually observed in nervous persons who are very excitable and do much mental work. Most of the recorded cases have been in the male sex. Excessive eating, or the ingestion of irritating foods, may precipitate an attack. The abuse of tobacco is occasionally a causative factor.

Symptoms.—The attack usually begins suddenly in the early morning hours. On the day previous the patient is generally in good health. The first symptoms that appear are acid eructations, heart-burn, nausea, discomfort and pain in the region of the stomach. The pain increases in severity and is usually of a spasmodic character, and may be so severe as to

cause collapse. In a short time vomiting occurs. This gives relief for a period, but soon the symptoms recur. The first vomitus generally contains particles of food, and is rich in both acid and ferments. The following vomiti are frequently yellowish or greenish yellow. This is due, no doubt, to regurgitation of bile taking place more readily when the stomach is empty. Analyses show that the ejected gastric contents still contain hydrochloric acid and ferments. This is an important character, as it shows that the secretion is continuous, even in the absence of food, and distinguishes the disease from hyperchlorhydria. Headache is usually present at some time during the attack. In some cases it precedes the gastric symptoms, as is usually the case in migraine. There is generally thirst, but the appetite is lost. The drinking of much water increases the vomiting, but the latter continues even if no water be drunk.

During the attack there is more or less collapse. The abdomen is commonly sunken. The patient looks pale; his pulse is as a rule small and frequent and the extremities cold.

The course of each attack varies from a few hours to two or three days. The symptoms disappear suddenly, and are immediately followed by an interval varying from a week to many months in which there is good health.

Diagnosis.—Intermittent gastrosuccorrhea must be differentiated from chronic gastrosuccorrhea, hyperchlorhydria, migraine, periodic vomiting, cyclic vomiting, and gastric crises of tabes dorsalis. The only distinctive sign of intermittent gastrosuccorrhea is periodic continuous flow of gastric juice. All other symptoms, such as vomiting, gastric pain and headache, may be manifestations of many other gastric affections.

In chronic gastrosuccorrhea the excessive secretion is continuous. From time to time, especially in cases accompanied by ulceration of the gastric mucosa, exacerbations of the hypersecretion may occur. These may be characterized by headache, nausea, vomiting, and all the other symptoms of an attack of intermittent gastrosuccorrhea. However, between these attacks the stomach is never empty. In the morning, or after a period of fasting, gastric juice can be syphoned from the stomach. The hypersecretion may be remittent, but never intermittent.

Hyperchlorhydria is characterized by an excessive secretion of hydrochloric acid and usually of gastric ferments during the period of digestion. The symptoms are digestive, and

when the stomach contains no ingesta there is no secretion of gastric juice. In hyperchlorhydria attacks of vomiting may occur, but are not so common as in intermittent gastrosuccor-rhea.

Migraine is an affection which presents a symptom complex similar to that of intermittent gastrosuccor-rhea. In both headache, nausea and vomiting may occur periodically. However, in migraine headache, frequently unilateral, is the essential symptom. It appears early in an attack, although generally preceded by prodromal symptoms such as spots before the eyes, vertigo, tinnitus, etc. Nausea and vomiting are as a rule later symptoms. The condition of gastric secretion is variable. In some cases the vomitus is highly acid, due to excessive secretion of hydrochloric acid. Continuous hypersecretion may also be present, and, if so, the gastric symptoms take a more prominent part in the disease picture. Migraine with hypersecretion is very closely allied to intermittent gastrosuccor-rhea.

Periodic vomiting as described by Von Leyden usually appears suddenly with nausea and vomiting. The vomitus is not hyperacid, and the gastric secretion is not continuous. Headache is frequent, but gastric pain is usually absent.

Cyclic vomiting in children has many points of resemblance to intermittent gastrosuccor-rhea. In both there may be hypersecretion, nausea, vomiting, headache, and depression. In both the attacks may occur periodically. In some cases, however, it is claimed that hypersecretion is not present. This character would distinguish it from gastrosuccor-rhea.

Gastric crises is a symptom complex observed in tabes dorsalis and rarely in other spinal diseases. The symptoms of the crises resemble those of intermittent gastrosuccor-rhea. Hypersecretion may be present, but is not a constant sign. The recognition of the primary disease suggests the diagnosis of the gastric affection.

Treatment.—The treatment of an attack should be initiated by cleansing as completely as possible the alimentary tract. With this purpose in view the stomach should be thoroughly washed out with a weak solution of bicarbonate of sodium. If the patient will not consent to the lavage, or for some reason it is contraindicated, then hot water is to be freely and repeatedly administered. The drinking of the hot water is usually followed by vomiting, which tends to cleanse the stomach and in some cases to abort an attack. As soon as the stomach has been

thoroughly cleansed it is to be given rest. No food is to be eaten, and water, except in small quantities, is not to be drunk. Thirst, if severe, may be relieved by the swallowing of pellets of ice, or by an enema of normal saline solution. The condition of the bowels usually requires attention. If constipation is present, benefit may be derived from the administration of calomel, or by an enema of magnesium sulphate in water. When vomiting has ceased for two or three hours we may look upon the condition as improved and commence the administration of food, at first liquid and in small quantities at a time; and as further improvement occurs in larger amounts.

The pain and distress in the region of the stomach may be mitigated by warm and moist compresses applied to the abdomen. Phenacetin combined with caffeine may be given for the relief of headache. Occasionally the gastric pain or headache is so severe that morphine is required to give relief.

In regard to the treatment of the cases between the attacks the principal indication is to remove the cause of the disease. If there is any perversion of gastric secretion or gastric motility, measures should be instituted for their correction. A slight degree of hydrochlorhydria or continuous hypersecretion is not an uncommon phenomenon in this affection. We should, therefore, be on the outlook for these perversions. If, from the history of the case, the attacks appeared to have been precipitated by the use of tobacco, or excesses in eating or drinking, etc., these errors in living should be interdicted. If excessive mental work appears to be a causative factor, the patient should be directed to alter his manner of living in order that he may gain more mental rest. The exhibition of bromide of strontium is frequently benefited in this type of case.

CLINICAL HISTORY OF A CASE.

J. K., aged 23, electrician, consulted me in December, 1904, on account of periodic attacks of vomiting from which he had suffered during the previous three years. Family history shows no predisposition to nervous affections. Patient is an inveterate cigarette smoker. He works hard (mentally) and is prone to worry about unimportant matters. His general habits are good. Prior to the date (1901) at which he first began to suffer from attacks of vomiting he had fairly good health, although suffering occasionally from headache, acid belching, and slight pressure in the region of the stomach after eating.

Since he was seventeen years of age has suffered from constipation. The present condition of the patient is as follows: Complains of constipation; drowsiness and slight gastric distress after eating; appetite good; tongue clean; position of greater curvature of stomach is an inch above the umbilicus. Analysis of gastric contents after test breakfast indicates a slight degree of hyperchlorhydria. No sign of hypersecretion; stomach free from gastric juice in the morning. The deep reflexes are exaggerated. Patient does not sleep well. No sign of organic disease of the nervous system. Other organs normal. Patient is placed on a diet suitable for hyperchlorhydria, and a mixture containing sodium bicarbonate and aromatic cascara administered.

Jan. 26th, 1905.—Patient is taken at 1 a.m. with vomiting and pain in the region of the stomach. The pain is variable in degree, being slight at one time and very severe at another. Vomiting gives partial relief. The first vomitus contained food eaten the previous evening and was very acid. No quantitative determination was made. The vomiting continues after the stomach was washed out, and the vomiti still contain free hydrochloric acid and pepsin, but no particles of food. In about twelve hours the vomiting becomes less frequent and ceases on next morning.

Treatment consists in administration of codeine phosphate and bromides of sodium and strontium. No food while the patient is vomiting. Then the treatment adopted before the attack is resumed.

After a few weeks patient left the city, and since then no report has been received concerning his condition.

SOME MASTOID CASES WITH COMPLICATIONS*

BY WM. CRAWFORD, M.D.

Mr. President and Members of the Hamilton Medical Society:

In presenting short notes of several cases of mastoid disease which I have operated on and which have presented to me unusual phases of the disease, I only wish to contribute, if possible, to our general knowledge of the disease, and think that discussion will elicit new knowledge of how to treat them so as to lessen the mortality of this, one of the most important diseases of to-day. In selecting these cases to report I have done so because they have been unusual in some way or ways, and the fatal cases have been reported as well as the recovered. The other cases of mastoid disease I have operated on have all been ordinary and have all recovered.

SOME MASTOID CASES WITH COMPLICATIONS.

CASE 1.—G.B., female, aged 30. First seen Sept. 6th, 1904. History good; well nourished; always has been well with exception of several attacks of ear-ache which she has had during the past few years. Recovered from each attack after some discharge. This attack started with pain about the ear and all over head about a week before I saw her, but the constant pain over the top of head was the worst. I found her suffering a great deal from this head-ache over top of head (not localized), some slight tenderness over the situation of the right antrum, but very little local pain in that region. Temp. was 103 deg., external canal was swollen on all sides, and I could not get a satisfactory view of tympanum. I incised tympanum and canal wall and got a very little pus discharge, and relief of tenderness. Next day local pain less, but head pain the same, temp. 102 deg. Incised tympanum again with more discharge and relief of local symptoms. Patient and friends very averse to any operation, although I told them of the probability of it. Next day, Sept. 9th, temp. 101 deg., patient sitting up, most pain and tenderness gone, and feeling much better. This seemed to show that the otitis media was all the trouble, and she was instructed as to the treatment to be pursued, and to come to office. She did not come or send any word. Oct. 22nd, her family physician had been called in the day before and finding I had the case before he notified me and I saw her again. She had had a severe

*Read before the Hamilton Medical Society, March 6th, 1906.

headache and pain since the day after I had seen her before, but they had not notified me. Much pain over top of head, slight, localized tenderness over antrum region, continued sagging of external canal wall, patient dull mentally and in great distress. Temp. 102 deg. I advised operation at once, and brother and sister who were present consented, but as this was late in the afternoon and place not suitable, I had them next morning take her to St. Joseph's Hospital. Temp. on admission 100 4-5 deg. In the afternoon I opened the mastoid bone, finding it very much sclerosed, and the first opening found was the antrum, which was filled with fetid pus. Cleared out well whole mastoid bone and antrum and made free communication with middle ear cavity. Temp. after the operation 100 1-5 deg. There was considerable albumin in the urine. Next day patient was some better, little pain, and temp. 100 deg. Another day and pain over top of head was as bad as ever, and temp. had come down to 99 deg. Next day again, temp. 98 4-5 deg., and pain in head continues, expression dull. On 27th condition the same, and concluded to extend wound and see if any other collection of pus could be found to produce the symptoms. Bone was removed back over sigmoid sinus and a small epidural abscess was found over the vein, but no indication of any more extension. Patient did not bear anesthetic well and operation had to be stopped and perform artificial respiration. There was no sign or characteristic symptoms of sinus involvement, such as chills, light temperature, local pain, or tenderness, and so the wound was dressed and patient put back to bed.

Next day, the 28th, the patient seemed better, having had a more natural sleep for the greater part of the night. Temp. 99 deg., pulse 80. After the first operation temp. went down to normal and on 29th pain in top of head as bad as ever. Oct. 1st pain still severe on top of head. Optic neuritis present in each eye, more marked in left eye, which also had some small hemorrhages. On consultation we concluded to try again, and patient was taken to the operating-room table for the third time, and the bone was removed extensively back over cerebellar region and up over cerebrum also. Sinus was found occluded, and on being incised no blood flowed. Internal jugular vein was then dissected out in the neck and tied, and sinus could not be syringed open between wounds. Cerebrum was needled in various directions with no result. There was some inflammatory tissue back over cerebellum,

and with a little manipulation some pus came from upper part, and on enlarging about two ounces of fetid pus poured out. No well-defined wall about abscess. Cavity large enough to admit finger, and opening was at upper surface. Cerebellum much disintegrated and distended. Drainage tubes were inserted in abscess cavity and wound dressed, leaving it open. Prognosis bad. Next day patient brighter, pain gone, having had a good night's sleep. Temp. 100 deg., pulse 120. For the next few days patient was restless, complained of pain in back of head and neck, had distress in breathing, some delirious. Part of cerebellum became discolored and dead, and I excised a dead portion as large as half my thumb. Temp. 103 deg., pulse 116, respirations were irregular; patient had a chill, had difficulty in swallowing, dimness of sight. These bad symptoms disappeared in a few more days under good nursing, and by the 20th she was doing well and wound healing nicely. Some diplopia and dizziness when sitting up. Right arm and leg very weak, left normal. Nov. 28th left hospital with wound nicely healed. Dec. 3rd wound completely healed, right arm and leg yet weak. Feb. 4th, 1905. —For a few days wound has been painful, and on palpation found a small fluctuating spot and incised, and found a small pocket of pus with sinus leading down in direction of antrum, and some discharge from meatus. This sinus and pus discharge has continued till now, although not accompanied by other bad symptoms and no pain.

Conclusion.—In the light which the operations revealed in this case undoubtedly a radical should have been done at first, but when first seen I was not sure that any mastoid operation was needed, and absence of tenderness over mastoid was explained by density of bone over antrum, and patient's friends especially were very averse to any operation. Through patient's delay in notifying me of continuance of symptoms she was not seen again until condition was so bad that the only thought in my mind was that of doing enough to save patient's life for a while.

Now, before a complete cure is obtained it will be necessary to remove original cause of trouble by removing the ossicles and curetting middle ear cavity, and I propose doing that when patient's health and strength are recovered, if I can obtain her consent.

Query.—How long had cerebellar abscess been present? My opinion now is that it had been there for probably a year

or more. Why is it arm and leg affected? Probably produced by pressure on motor area of cerebral cortex.

CASE 2.—Mrs. C., aged 58. Family history good, has been a fairly healthy woman. About fifteen years ago had left mastoid operated on, and at intervals since the old wound has broken out and pus discharged for a time and then healed.

About Sept. 1st, 1905, right ear began to pain and has continued since with remissions. Temperature has varied from 99 to 100 deg. Pain radiates over side of head. Sept. 21st I saw the case in consultation with the family physician. Right tympanum, on inspection, showed bulging in lower posterior part, tenderness slight over antrum. Paracentesis of tympanum produced a flow of pus and cessation of pain, and as symptoms were not greater than those produced by an acute otitis purulenta, no more was done that day. For next few days pain ceased and temperature came to normal again. Pain started and temperature came up to about 100 deg., with a good deal of discharge from meatus. Saw patient again on Oct. 8th, and as there was constant pain and temperature 100 deg., with more marked tenderness over antrum, I did an ordinary mastoid operation, finding very little pus but extensive breaking down of mastoid cells and a very large mastoid. Entire mastoid was removed, and auditum and antrum curetted and free drainage given to middle ear cavity. Wound was packed as usual and healing by granulation took place; temperature came down to normal; pain ceased and external wound healed by middle of November. Discharge from meatus lessened but did not entirely cease. Case was in the country, and was under charge of family physician, and I did not see it again until Dec. 30th. Was told that for the last three weeks pain had again been complained of over side of head and discharge had slightly increased, and lately some swelling of tissues over zygomatic arch with tenderness on pressure. General condition weak from long continuance of trouble, but was up out of bed and at table for meal every day. Tongue coated; temperature 99 2-5 deg.; tenderness over arch of zygomatic, and condition was thought to be necrosis of bone from infection, or from some cells that had been overlooked in former operation. Although patient was weak operation to relieve condition was necessary to save life of patient. Relatives and patient consented, and she was brought to the City Hospital that day and operated on next morning. Ether was administered by an expert, and I was assisted by

the family physician in operation. An incision was made starting from upper portion of old wound and curved around over top of ear toward arch of zygoma for about two inches, severing a portion of temporal muscle. It had dissected up the periosteum over a space as large as a silver dollar and invaded the muscle and reached down under the arch of the zygoma a slight extent. The abscess cavity was thoroughly curetted, and some softened bone was found at the root of the zygoma. These were removed by curette and rongeur, and to prevent any further possible trouble it was thought best to do a radical operation and turn all this space into one cavity which could be inspected and treated through the meatus. The wound was packed in the usual way, leaving the incision open except at upper part and facilitate dressing until site of abscess cavity was granulated. Patient bore operation very well, pulse not exceeding 86 and fairly well. To prevent any untoward symptoms strychnine was given hypodermically, and on being put to bed saline was given under breast. About an hour after I had reached home I was telephoned by the house surgeon that patient was looking bad, breathing poor, blue appearance, pulse weak, etc. I asked him to give a solution per rectum and I would be down. Before I could get ready he telephoned patient was dead, was *in extremis* when he reached her after telephoning me at first.

Conclusion.—What was the cause of extension of disease? Did I fail to find all diseased cells, or was there extension from middle ear in the other direction? Should I have done a radical at first operation? Was her bone tissue unhealthy, as shown by result on other ear? It teaches me to be thorough in search of possible disease when operating on mastoid.

CASE 3.—L. H., aged 10, has had a discharging ear at intervals for some years. About August 7th, 1905, after exposure to cold and wet took pain in ear, which has continued and increased in intensity, and on the 14th caused a slight discharge from meatus. That morning I was asked by family physician to go to the country to see her, but was unable to go at once, and arranged to go at noon. Just when boarding the car I received a telephone message from physician not to come, as in his opinion the girl was very low and not able to stand an operation. Next day noon received another message to come, as girl was in much the same condition as the morning of the day before. I found patient semi-conscious, temperature 102 deg. She had had some mastoid tenderness and

several chills, followed by mental dulness. I told the friends that without something being attempted she would not live, and that operation might not save her, but would probably give her the only chance possible. I was asked to operate, and did so with attending physician giving anesthetic, and only a family nurse to assist, and conditions such as could be hastily improvised. Found subperiosteal abscess over antrum, but most of mastoid healthy. Antrum very large and filled with broken-down tissue; extended wound over sigmoid sinus, which I found occluded. It was opened and found filled with clot. This was everted out of both ends, and a fair flow of fluid blood obtained from each end. Antrum was thoroughly cleared out and a free communication made with middle ear cavity. This consumed some time, and it was getting near the end of a short fall afternoon. Darkness was coming on and the only light available was that from oil lamps. Patient also did not bear anesthetic very well, and while I thought of dissecting out internal jugular vein in the neck and ligating it, I concluded that the danger of leaving sinus as it was was not greater than of attempting more under present conditions. Wound was packed and dressed and patient put to bed. I asked to be informed in a day or so how patient was doing, but word which was sent by attending physician was not delivered, and I did not hear for some time. Physician then informed me that patient did well for about ten days. Temperature had gone down, mental condition cleared up, no more chills, no pain, wound was healing nicely. Then she became worse, had chills, and gradually sank and died a couple of days after bad symptoms started; no autopsy. Symptoms were such as would be produced by metastasis from original infection, and I think such must have been the case, although every infected part seemed to have been removed.

CASE 4.—Miss A. B., aged 25. Family history good; had measles when a child, and also suppuration from left ear, and occasionally since would have trouble in that ear, with discharge. Since about a year ago it has been gathering and breaking every week or so. On examination, June 20th, 1904, external canal was filled with a foul-smelling discharge and tympanum was found ruptured. On cleansing and syringing out middle ear a considerable quantity of dark colored sticky mucus was washed out, and drum healed in two days. In a few days again ear became painful and drum bulging, and I made a large opening in posterior segment and syringed out

a quantity of mucus. This occurred several times after, and I then cut a flap of the drum to leave a permanent opening. This prevented accumulation and pain, but treatment applied to middle ear cavity and good drainage did not stop the discharge. I could not with probes detect any dead bone, and decided after consultation to open mastoid and drain antrum.

Nov. 23rd, 1904, operated at the City Hospital, and did a regular Schwartz operation, and found mastoid cells somewhat softened, and in antrum some polypoid condition of membrane lining cavity. This was all curetted out and free opening made into middle ear. Patient did well, wound healing by granulation nicely, and discharge from meatus almost stopped, and she left hospital on Dec. 10th and went to stay with a friend. On Dec. 13th I found wound somewhat inflamed, red and painful, and some pus discharge; no pus at any time before, but house surgeon at hospital had examined mucus discharge and had found staphylococci present. This went on for some days, and on enquiring found that there had been a bad case of erysipelas in house some few months before, and I now believed that my case had become infected. However, external wound healed, but there continued to be a very small amount of mucus discharge. Not stopping, and with patient's consent, I did a radical operation at City Hospital, removing ossicles, which were found slightly involved, and curetting middle ear cavity, and immediately closed the external wound, which healed very quickly, and she left the hospital again on Feb. 7th, 1905, with external wound healed and only a little moisture in what used to be the middle ear. This gradually ceased, being freely accessible from external meatus. Cavity became epidermatized and dry. A good result, with hearing at six feet.

Comment.—This case was unique in my experience, tympanum being entire and no pus at any time from middle ear, but resisted all other methods of treatment, and necessitating a radical operation to cure. Also, what influence did the attack of erysipelas have on the continuance of the very slight mucus discharge which was nearly stopped at time of the attack?

CASE 5.—Mr. E. S., male, aged 24. Consulted me on March 24th, 1904. Has had for a few days a pus discharge from left meatus. Has had but very little pain. This was treated in the usual way for a couple of weeks without lessening discharge. A few granulations presented themselves at about the

middle portion of posterior meatus, and on their removal a small perforation was found from which pus came. This was enlarged and treated by antiseptics. Continued pus discharge, did not stop, but there was no pain of any account and no rise of temperature, and patient continued at his work. On April 25th, in morning, patient presented himself with a swelling behind ear, and I then advised immediate operation, and a consultant concurring in that opinion, he was sent home and got ready for operation, which was performed at his home that same afternoon. The entire mastoid bone was found disintegrated and filled with pus, which was also found in large quantity in digastric fossa. It was thoroughly cleaned out and free opening established with antrum and middle ear cavity. Course of healing was normal and wound granulated and was thoroughly healed by May 12th. Result, perfect hearing as before the trouble.

Comment.—This was a typical befohd mastoiditis, and produced this very large amount of destruction of mastoid bone with a minimum amount of disturbance of general health, and without producing any destruction of bone about antrum or middle ear, leaving the ossicles healthy when drainage was established posteriorly.

ADDITIONAL EXPERIENCE IN THE TREATMENT OF PELVIC DISEASE ASSOCIATED WITH PSYCHOSES.

BY ERNEST A. HALL, VICTORIA, B.C.
Fellow British Gynecological Society.

Two years ago at the meeting of this Association in Victoria I brought before you a matter that has engaged the attention of not a few of the leading men of the profession in Europe, viz., that of providing accommodation for the better treatment of extreme forms of nervous diseases and of recent cases of insanity, and for the placing of such cases under more favorable circumstances than are usually found in our provincial hospitals. This matter, though favorably received by not a few members, was postponed for one year and finally dropped. It is not my purpose to re-introduce discussion upon this matter, as in the tardy evolution of rational treatment of the insane, the realization of the ideal is evidently yet in the dim distance. I will dismiss this subject with an extract from an address delivered by Dr. Clouston, of Edinburgh, before the Medico-Psychological Association, July 25th, 1902. In speaking of the advantages of treating recent cases of insanity in wards associated with the present general hospitals he said: "Firstly, any one may go to seek advice at a hospital, or to be treated in one, without losing any of his self-respect, injuring his prospects in life, or going counter to any special prejudice in his mind. Secondly, the treatment of this class of diseases—I attach enormous importance to this argument—would educate our poorer population, and, indeed, the whole population, into entertaining the belief that mental disease is on all-fours with other classes of disease, and that it in no way implies shame or repulsion. If this education could take place to any degree it would sweeten life to every family in which mental disease has occurred, and that would probably comprise every fourth or fifth family connection in the land. Besides, it would diminish one of the most poignant terrors in the lives of those who have suffered from the disease or who fear its occurrence. The absence of this prejudice and fear would of itself greatly aid recovery.

"Assuming that there would need to be a time limit, say six weeks to two months, to the stay of those patients in such

wards, just as there is in the case of most ordinary medical and surgical patients, would such a comparatively short period be sufficient for effective treatment? In a large number of cases this period would be sufficient. In the cases of those who got worse, or in whom the symptoms were prolonged, we have the asylum to fall back upon. We have the means, therefore, of continuous special treatment where needed. I have found that out of the ordinary certified patients 10 per cent. recover, and are discharged within six weeks; 20 per cent. within two months. A much larger number treated in the earlier stage for the milder form of disease would recover; and many could safely leave the hospital to complete their recovery at home. If you have broken the bad brain habit, if you have successfully contended by proper treatment with the worst symptoms, the patients could with safety go home to complete their convalescence."

With regard to my investigation into the association of pelvic disease in women with mental disease, I have nineteen additional cases to report. Of these eighteen were married, and one single; two had recovered mental health in the provincial hospital for the insane, and two others were not mentally affected at the time they came under my care, one for obstruction of the bowel from adhesions to a larger parovarian cyst. Eighteen of these patients showed decided pelvic disease.

As it is principles we are endeavoring to evolve, rather than the report of and discussion of "cases," I will make my report as brief as possible.

No. 111. Mrs. —, aged 33. Good heredity, married two years, one child; referred by Dr. Proctor. Six months after birth of child had attack of religious mania, took dislike to her child. She was cured by her family physician, who also found an enlarged ovary. When she came under my care some months later she would not carry on a reasonable conversation, but continually talked of hell and her burning in it. She was obedient to the nurses. The treatment consisted in curetment, amputation of the cervix, removal of right cystic ovary and both tubes. Convalescence normal. Within a few weeks a great mental change was apparent, and after six weeks I was unable to detect any trace of her former delusions. The last report from her husband was perfectly satisfactory. Dr. Proctor reports this case completely recovered.

No. 112. Mrs. —, aged 38. Melancholia for some

years. Seen with Dr. W. B. McKechnie. Uterus enlarged, with fibroid cervix. Hysterectomy was done by Dr. McKechnie, but up to last report no alteration of the mental condition was noticeable.

No. 113. Mrs. —, aged 33. Four children, youngest 11 years. For four years suffered from attacks of melancholia lasting six weeks. Examination showed lacerated perineum and left salpingitis, also piles. Operation recommended.

No. 114. Mrs. —, aged 35. Married twelve years. Three children, youngest 8 years old. Brother died in asylum after injury to head. Was in provincial hospital six months with mental recovery. Dr. Doherty diagnosed internal trouble. Examination showed right movable kidney, cystic ovary, lacerated cervix and perineum. At the operation the omentum was found adherent to the uterus. Convalescence normal.

No. 115. Mrs. —, aged 35. A borderland case, good heredity, no children, suffered from pain in left side for six years. For some time had become mentally confused, careless of personal appearance, with intermittent attacks of melancholia. The conditions found were: Appendix constricted by fibrous band, omentum adherent to anterior abdominal wall, both ovaries cystic. Convalescence normal. Mental stability recovered.

No. 116. Mrs. —, aged 28. Three children. Mother insane after each child. Brother insane from self-abuse. For three years suffered from dull pain in head and back. Intermittent melancholia; at times would run into street in an excited condition. Mind cloudy. She had been to several practitioners who diagnosed ulceration of the womb. The conditions found were: Metritis, with fungosities; chronic appendicitis, and slight uterine prolapse. Convalescence normal. Mental improvement, but at times still depressed.

No. 117. Mrs. —, aged 30. Two children, good heredity. Had received treatment for congestion of the womb. Melancholia. Several times threatened her life. She suffered severe pains in the head and back; increased during menstruations. The conditions found were: Laceration of cervix; ovaries septic and slight prolapse; convalescence normal; pains in back and head all but removed; mental condition improved.

No. 118. Mrs. —, aged 30. Mother and aunt melancholic. Two children. Miscarriage six years ago. For several years had been very nervous. During her husband's absence

she awoke at 1 a.m., screaming that he had been killed in a railway wreck. This happened exactly twenty-four hours before he had been in a wreck on the C.P.R., in which one of the employees of the road had been killed. She continued acutely maniacal. Under chloroform I found sufficient to justify surgical treatment. The medical attendant absolutely refused consultation and co-operation with me, as he said there was nothing to be done. I found lacerated cervix, fungosities, left ovary cystic, chronic appendicitis. Physical convalescence normal. There was no mental improvement, and after three weeks she was removed to the Provincial Hospital, where after a few months she made a perfect recovery. She has greatly improved in physical health, never enjoyed better health than at the present time.

No. 119. Mrs. —, aged 23. Religious delusions and mild melancholia. Good heredity. Conditions found: Cervicitis, with erosion; fungosities, cystic right ovary and adherent clitoris. Convalescence normal. Mental recovery.

No. 120. Aged 28. One sister insane. Married eight years. Three children. Pain in side for years, acute mania. Was referred to me, but was too violent to treat in private hospital; was sent to Westminster, where she recovered after a few months. The conditions found were: Lacerated cervix and perineum; both ovaries cystic; partial uterine prolapse. Convalescence normal. Physical health improved.

No. 121. Mrs. —, aged 41. Good heredity, three miscarriages, a history of gastric ulcer, followed by delusions. Examined with Dr. Doherty in the Provincial Hospital. Conditions found: Salpingitic adhesions. Treatment recommended. She was removed to the Burrard Sanitarium, but became so unmanageable that she was returned to Westminster without treatment.

No. 122. Mrs. —, aged 33. Good heredity, three children, well marked delusions, said she had been a horse for years, now a cow, etc. Conditions found: Left ovary enlarged and adherent in cul de sac. Operation recommended.

No. 123. Mrs. —, aged 48. Good heredity, five children. Had abscess from last child; suffered from severe pains in head and pelvis, and delusions; was unmanageable; destroyed furniture, burned silver plate, etc. Conditions found: Lacerated perineum, cystic ovary and adhesions. Operation without any mental improvement. Was subsequently placed in the hospital for the insane.

No. 124. Mrs. —, aged 38. Good heredity, seven children. Melancholic after each child-birth. Youngest child two years old. Has been confused and forgetful. Had been recently in the asylum. Conditions found: Lacerated perineum, cystic left ovary, chronic appendicitis. No apparent mental improvement when she left the hospital.

No. 125. Mrs. —, aged 24. Two children, good heredity. Referred by Dr. Boucher, of Phoenix. Suffered from severe pain in head and side; became nervous, excited, with delusions. Conditions found: Right ovary cystic, chronic appendicitis. Convalescence normal. Mental condition very much improved upon last report from Dr. Boucher.

No. 126. Mrs. —, aged 37. Good heredity, three children. Melancholia from birth of last child, four months previously. Suffered at that time from pelvic abscess, which was opened externally. She became unable to manage her household, and had to be under constant surveillance. Examination by Dr. Frank Hall and myself showed large ovarian cyst with adhesions. Operation by Dr. Frank Hall, with immediate mental recovery.

No. 127. Mrs. —, aged 40. Good heredity, four children. Complained of abdominal pain for ten years. Had nervous prostration for eight years, with periods of mania. Perfectly rational at present time. Conditions found: Cervical tear and polypus and myometritis. Convalescence normal. The after physical history of this case has not been as satisfactory as I had expected. It was the only case of the series in which I did not open the abdomen. I regret that this was not done, as she has subsequently complained of symptoms referable to conditions that might have easily been rectified. In dealing with these cases, especially when there have been indications of intra-abdominal trouble and where operative measures are demanded, I would favor opening the abdomen as a matter of more accurate diagnosis.

No. 128. Mrs. —, aged 56. Good heredity. Seen in consultation with Dr. McKechnie. Simple dementia. Examination showed slight perineal tear, but not sufficient to call abnormal. No treatment recommended.

No. 129. Mrs. —, aged 39. Good heredity, no children. For several years had given evidence of mental disturbance. Subject to fits of ungovernable temper, alternating with depression; took little interest in domestic duties, slovenly in habits and appearance, but not decidedly affected at time of

operation. I removed a large par-ovarian cyst. Convalescence normal.

The operative treatment given these cases is most conservative. Normal ovaries are never removed; cystic ovaries are resected. All other structures are dealt with in the same manner that we would deal with similar conditions in ordinary patients, with this exception, that, in view of the desirability of limiting the production of defective offspring, to diminish the insane potential, I request the friends to allow me to sterilize the patient by removal of the tubes close to the uterus.

As to the results in these nineteen cases, all but one presented definite pelvic lesions. There were no deaths in the cases submitted to treatment. Of the other eighteen, no treatment was recommended in one case; in two operative treatment was advised, and of the remaining fourteen upon which I operated the result was physical improvement in all cases. As to the mental results, four were not mentally affected at time of operation, and, so far as I have been able to ascertain, of the remaining ten, four recovered, four were improved, and two were unaltered.

These results superficially viewed do not give a very brilliant showing, but we must remember that these patients were treated for physical disease. No case is treated in which a physical lesion is not ascertainable, and the physical results have been equal to that obtained by any of you in the management of your ordinary gynecological patients, but in addition to the improved physical condition we can report four mental recoveries and four improvements out of twelve operations upon those mentally clouded. The results are worthy of consideration. Or, to take a different view-point, surely the unfortunate dement suffers sufficient distress in the mental disability without the additional load of physical disease; and who so unsympathetic, so inhuman, as to deny her the privilege of physical relief?

Psychic abnormality is conditioned by imperfect development or physical deterioration. Irritation, sepsis, and degeneration, too often lead the way through the mazes of nervous phenomena from slight alterations of thought, habit, and conduct to complete rational subjugation. This process is frequently somewhat tardy, and it is during this prodromal period, before thoughts and habits are confirmed, that we should most carefully interrogate the various bodily organs and functions and endeavor to determine the presence of lesions that might in any way interfere with physiological harmony, remember-

ing that insanity is the psychic sum of the physical abnormalities, and that perchance the removal of but a comparatively minor lesion may regulate cortical metabolism and restore the mental balance. Bearing upon relationships, I quote from McNaughton Jones:

“The connections between the vagina, uterus and ovaries through their nervous supplies, with the splanchnic nerves, and with the spinal chord in the sacral and lumbar regions, through the pelvic and hypogastric plexuses, anatomically explain many of the reflex phenomena that follow upon stimulation or irritation of the ovarian and uterine nerves consequent upon disease in the ovaries or uterus.

“The reflex connection between the mammary gland and the uterus, and between the sciatic nerve and the uterus, shows that this reflex association is established between the uterus and such a distant part as the nipple, and other peripheral nerve-trunks, as those of the sciatic.

“As examples of this, we may take the occurrence of varying shades of optic neuritis and retinal irritation in connection with suppression or irregularity of the catamenia; neuralgic pains in the eyeball associated with the menstrual epoch, neuralgia of the supra and infra orbital nerves, slight epileptiform seizures of the facial muscles, toothache and dental neuralgia, laryngeal migraine and functional aphonia, or paresis of the intra-laryngeal muscles, milder forms of hypertrophic rhinitis; and similarly, tinnitus aurium and vertigo, sympathetic neuralgia and temporary congestion of the mammae. As consequences of menstrual irregularities, we find irritation of the dorsal and lumbar painful spinal zones, herpetic eruptions of the skin, functional irregularity of the cardiac rhythm, gastralgia and nausea, slight ichteric attacks, atonic or irritable states of the intestines, irritation of the bladder, with increased frequency of micturition, pains in the branches of the lumbar and sacral nerves; varieties of headache, and severe hemicrania. All such symptoms may be accounted for by reflex vaso-dilating or vaso-constricting effects produced by irritation arising in the uterus or ovaries, as the result of arrested or imperfectly discharged physiological processes.

“It is equally true that the ill-health of the uterus or ovary is frequently the first step in the general deteriorating process, and as it originates, so it maintains it. All we know of the physiology of uterine action compels us to regard the uterus

and ovaries as the strongest links in the chain of the woman's health. Weaken them as you may from without or within, and you immediately, but fundamentally, touch all the mainsprings of her life."

With reference to the results of my work in this department, which has covered some seven years, my statements will be somewhat more conservative than those given expression to in the enthusiasm which greeted the opening of a comparatively new field for therapeutic exploitation. Results, even beyond the most sanguine expectations, in the early part of this work no doubt were capable of giving a bias to my judgment and influencing conclusions. This may have been a factor in my earlier discussions of this subject, and has possibly led to the making of statements that to-day are to be modified. Yet the main contentions of seven years ago stand firmly established to-day, and it becomes in this department, as in all others of our profession, a matter of keen discrimination, careful judgment and skilful application.

It is satisfactory to note the ever-increasing attention that is given to the matter of physical disease in the insane, and also the fact that many of the leaders in the profession, both in America and Europe, are agreed upon the important role that disease of the genital organs of women play as causative factors in the production of psychoses, and coming nearer home I have to thank not a few of the profession of our own province for their appreciation and hearty co-operation in the work. There are yet those who ridicule, and a few who oppose. Of these it can be unprejudicially said that as a rule they are those who have given the matter very little consideration and have made no personal investigation.

Of the intricacies of co-ordination, association and interdependencies of mind and body underlying our superficial observations, we know nothing. We do not dare to state that a given mental defect is conditioned by a corresponding physical abnormality, that an alteration of habitual conduct can be traced to a tangible physical disease; but what is paramount to this discussion is, does the lacerated cervix with everted membrane, the adherent omentum, salpingitic adhesions, cystic or fibroid enlargements interfere with normal physical metabolism? If so, then let us show a willingness to remedy these conditions. With the mental phenomena, as such, we as surgeons have nothing to do except to hope for mental relief to follow the restoration of physical health.

OPSONINS AND AGGRESSINS—A REVIEW.

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The role which opsonins play in immunity against disease is so interesting and the literature so extensive that the subject is worthy a short review, and since the theory of aggressins is at first sight a directly opposite view, it also deserves some attention.

Metchnikoff has shown that the white corpuscles of the blood have the power of ingesting and devouring bacteria, and believes that through this cellular agency we have immunity to disease. (Ref. 1, 2, 3.)

Buchner and his school believe and have shown that immunity in some diseases at least is due not to the cells but to the fluids of the body. (Ref. 4-11.)

Wright has shown that in some diseases immunity is due not to the cells alone, and not to the fluids alone, but to their combined action. (Ref. 12, 13.) To do this he takes each agent entering into the act of phagocytosis, viz., the leucocyte, the bacteria, and the fluid in which they move, and these he studies in their various combinations, imitating, of course, the natural conditions as to temperature and alkalinity of media.

He found that when the leucocytes and bacteria met in an artificial normal saline media no phagocytic action took place. Also, if he used as media normal serum heated to 65 deg. C. no action occurred. And if he used serum a week old action was again absent. But if he used fresh, unaltered serum the bacteria were taken up by the leucocytes.

Thus, apparently, some substance in the fresh, unheated serum acted as a sensitizer or appetizer, and this has been called by Wright opsonin—I prepare food. Briefly the technic of the experiment is as follows:

Prepare the following material: (1) Emulsion of bacteria made by rubbing up a little of a pure agar culture in distilled water or normal saline; (2) fresh serum, prepared by drawing about six drops of fresh blood into a miniature cigar-shaped tube with capillary ends, sealing and centrifuging (3) a quantity of corpuscles free from serum, prepared by dropping ten drops of fresh blood into 4cc. of a fluid to prevent clotting, for which 1 per cent. sodium citrate solution

is best. Then by the settling of the corpuscles to the bottom by centrifuging they are washed free from serum and are still in an uninjured and active condition. (Ref. 12, 13, 14.)

Equal volumes of corpuscles, serum and emulsion of bacteria are mixed and incubated for fifteen minutes at body temperature, 37.5 deg. C., using as incubation chamber a small test tube, capillary tube, or, after the original method of Leishman, a slide and cover glass. (Ref. 15.)

At the end of period spread contents on glass slides and stain cocci by Leishman's, Jenner's, Wright's, or Hastings' stain, tubercle by the Zuhl-Neilsen methylene blue method. Under the 1-12 lens the number of the bacteria in the interior of the corpuscles are counted.

By similar technic, with variations and modifications, opsonins have been shown to have the following qualities: They are present in almost constant quantity in the normal animal (Ref. 13); are present at birth; are thermolabile and destroyed above 65 deg. C., and gradually disappear on standing in about six days (Ref. 12); they are specific (Ref. 16), and the specific opsonin may be precipitated by an emulsion of that particular variety of bacteria; are absorbed by the latter, from which they are then inseparable, and are not affected by heat above 65 deg. C. (Ref. 13); the relative degree of phagocytosis is directly in proportion to the quantity of opsonin present (Ref. 17).

In nature opsonin are bodies built on the type of agglutinin and analogous to Ehrlich's receptor of the second class. (Ref. 16.) They are composed of two groups, a haptophore group for attaching to bacterial receptors, and an opsoniferous group which effects the change necessary for phagocytosis, and that the action of solutions of certain poisonous or irritating drugs prevent phagocytosis, not by harming the leucocytes but by preventing the sensitizing action of the opsonins. (Ref. 17.)

Their proportion is greater in certain parts of the circulation than in others, being less around foci of septic inflammation. (Ref. 12.)

In healthy persons they are present in about the same ratio, but in the subjects of chronic infection by pathogenic bacteria the specific opsonin is decreased, but in proportion as it increases the infection decreases.

This has been found especially true in cases of chronic infection by the tubercle bacillus, staphylococcus, pneumococcus, streptococcus, gonococcus, bacillus coli and dysenteriae, in fact,

in all except the bacillus diphtheriæ and bacillus Xerosis. (Ref. 12.)

But the point of practical importance in therapeutics is that it has been found possible to experimentally increase the specific opsonin to a degree exceeding the normal healthy ratio, and when this can be accomplished the disease, which had formerly resisted all former measures to alleviate it, thus comes under control. (Ref. 18, 12, 19.)

Among the diseases in which this has been done are tuberculous ulcers (Ref. 19), tuberculous glands (Ref. 20), tuberculosis of bones and joints (Ref. 21), tuberculosis of bladder (Ref. 22), lupus vulgaris, tuberculosis of lungs, primary staphylococccic infection producing furunculosis, carbuncles, acne sycosis (Ref. 23), pyorrhea alveolaris (Ref. 18), pneumococccic infection causing chronic empyema (Ref. 24), gonococccic infection causing gleet, bacillus coli and bacillus dysenteriæ causing chronic diarrhea.

The line of procedure in treating a case of chronic infection so far incurable is, briefly:

1. First, cultures and plates are made, and, if possible, the infecting organisms are isolated.

2. A determination is made of the opsonic index, *i.e.*, the ratio of opsonin in the blood of the infected individual to that in a healthy person, or, putting it in other words, the ratio of organisms ingested by a given number of leucocytes in a given time, when the patient's serum is used, to the number ingested under exactly similar circumstances when the serum of a healthy individual is used.

3. A sterilized vaccine is prepared of the organism from a pure culture on agar. In the case of the staphylococcus this should contain about 500,000,000 cocci per c.c.m., or about 1.0 mg. of dried culture. (Ref. 25.) In the case of tuberculosis the vaccine should contain 1-2000—1-200 mg. of dried tubercle powder per c.c.m. (Ref. 25.)

4. Following the determination of the opsonic index a subcutaneous injection of vaccine is made, the dose varying 0.1 mg.—1.0 mg. in coccal infections and from 1-1000—1-500 in tuberculous cases.

Subsequent treatment depends on the result of the initial injection.

The effect of an inoculation of vaccine in a healthy, uninfected individual is an immediate rise in the opsonic content of the blood. (Ref. 27.)

The effect in an unhealthy, infected person is the opposite. A fall or decrease which extends gradually over a number of days is the negative phase, to be followed by a return to its original height and a subsequent rise beyond—the positive phase. (Ref. 27.)

Coincidentally with the rise occurs an amelioration in the signs and symptoms of the disease, which again assumes a stationary but improved condition, and a daily determination of the opsonic index over a period shows that it also has reached a stationary but higher level.

Exceptions to this rule occur if (1) the initial dose has been too large; (2) if the machinery of immunization, *i.e.*, the power of reaction, is already overtaxed; (3) if reinoculation takes place within the negative phase. (Ref. 28, 19.)

Reinoculation of a larger dose after the positive phase has reached its height is followed by similar effects as before, the amount of opsonin being gradually increased until it is equal to or greater than normal, *i.e.*, an opsonic index of 100-100 to 150-100, etc., and with this the disease shows marked improvement.

Reinoculation is, therefore, contraindicated until the last has produced its maximum effect, as shown by the opsonic index, and is entirely contraindicated in those cases in which the first injection is followed by a permanent negative phase.

Acute or progressing diseases are apparently unsuitable for this method of treatment, due, doubtless, to the fact that autoinoculation is continually taking place, and that the power of reaction is already overtaxed.

In active tuberculosis exercise seems to produce the same autoinoculation effect, while perfect rest in bed permits the reaction to the toxins already absorbed to take place, and prevents the autoinoculation of overdoses. (Ref. 29.)

The Opsonic Theory in Diagnosis.—Those cases which on repeated examination show a decreased opsonic index to any organism, as the tubercle bacillus, are probably infected with that organism. (Ref. 30, 13.)

When several organism are present, that toward which the opsonic index is lowest is probably the most important in causing the disease. (Ref. 18.)

When, after an injection of T-R for diagnosis the fever reaction is negative, a sudden fall of the opsonic index may be accepted as a positive indication. (Ref. 27.)

Value of Opsonic Work in Prognosis.—Cases of staphy-

lococic infection showing a long-continued negative phase after injection do not offer good hopes of cure.

Cases of tuberculosis showing an even opsonic index near normal are not subject to severe autointoxication, and hence the disease must be quiescent or circumscribed.

In therapy its value has been already mentioned.

These observations have been verified and confirmed by Wright, Bullock, Bruce, Goadby, and many others in England; by Von Hektoen and Ruediger, E. Walker Adams, Klotz, J. J. Mackenzie, Simon, and many others in America.

AGGRESSINS.

To Wright's theory of opsonins, which appeared in 1902, Bait's theory of aggressins, appearing in 1905, was apparently the direct opposite. (Ref. 31.)

While one believed that absence of phagocytosis was due to lack of a special substance which pensitized the bacteria for ingestion by the leucocytes, the other believed that absence of phagocytosis was due to presence of a special substance excreted by the bacteria, and capable of paralyzing the leucocyte. While one theory seems the antagonist of the other, there appears reasons why both may be true. (Ref. 32.)

E. L. Walker has shown that the tubercle bacillus representing the class of infectious organisms which do not cause a hyperleucocytosis excretes a toxin which has the power to inhibit the action of the leucocyte in the presence of opsonin; that the toxin and opsonin both act independently, and that the ratio of influence of opsonin in favor of phagocytosis to toxin against it is as — 9 to — 11.

In the other class, in which the toxins absorbed cause a hyperleucocytosis, as in diphtheria, Walker found that the toxins did not prevent or inhibit phagocytosis, but aided it.

According to Bail's division of pathogenic bacteria these two represent two extreme classes, viz., (1) the true parasite, which excretes aggressive substances, which, inoculated in the least quantity can grow, and by paralyzing the cellular powers of defence spreads itself through the whole body, and (2) the true saprophyte which excretes no aggressive substances and develops locally.

The facultative or half-parasite occupies a middle position, since it is able to spread through the body only if inoculated in quantities sufficiently great to produce enough aggressin.

Bail's argument in brief is as follows: If into the blood

stream of one animal are injected simultaneously equal numbers of the anthrax bacillus and bacillus subtilis, by this means being spread equally through the various organs, and if the anthrax bacilli are able rapidly to increase, while the bacillus subtilis do not, although the same powers of defence are exerted against each, this must be due to only one cause, viz., that the anthrax bacilli are able to paralyze the means of defence opposing them. And to do this there must be liberated or secreted a special substance having aggressive qualities, which he calls aggressin.

Among the aggressin-producing bacteria which act as true parasites are the anthrax bacillus in man, the tubercle bacillus in the guinea pig, the diplococcus and staphylococcus in the rabbit.

For the purpose of experiment is employed the peritoneal exudate of a tuberculous guinea pig killed by the intraperitoneal injection of 100 mg. of fresh tubercle bacilli. By this means is believed to be obtained a fluid rich in aggressive substances.

If a few cubic centimetres of this exudate is injected into a healthy animal it does not become sick or show any effect.

If a healthy animal is inoculated with a considerable quantity of tubercle bacilli at one time very slight change occurs at once and the period of sickness is measured by days or weeks.

But when the same doses which singly produced slight sickness are injected together or simultaneously the animal dies in a few hours, which Bail calls the acute death. This seems to bear out his theory that the exudate contains some substances which paralyzed completely the defensive powers, leaving the bacilli to flourish unchecked.

The most characteristic post-mortem findings in an animal after the acute death is a pleural and peritoneal exudate in which lymphocytes almost exclusively exist.

From whence does the aggressin arise? Is it a product of the bacteria, *i.e.*, an excretion, or an endotoxin, the result of the solution of the body substance of the bacteria, or is it produced by the reaction of the tissues to the infection?

The phenomenon of Koch is taken to indicate it an endotoxin. Koch showed that at a certain period of the guinea pig's tubercular sickness a state of over-sensitiveness exists, during which the intraperitoneal injection of a small number of fresh bacilli again results in an acute death. This Bail

attributes to the increased power possessed by the over-sensitive animal for producing a bacteriolysis of the bacilli, thus setting free their endotoxin, which acts as aggressin. (Ref. 33.)

In his later work, however, Bail speaks of natural aggressins which are formed in infected animals and cannot be identified with such as are formed from body substances of bacteria. These cannot be demonstrated chemically and represent only characteristics of fluids due to products which develop in the infected body and not mere products resulting from the reaction of the organism to the infection. Other qualities of the aggressin exudate he found. A small quantity is more aggressive than larger quantities, and a small quantity of heated exudate is more aggressive than an equal quantity of unheated. (Ref. 31, 34.)

These experiments were continued with the diplococcus (34), staphylococcus, bacillus dysenteriae (35), anthrax and bacillus typhosus (36), all of which were shown to possess aggressin-producing powers.

Kikuchi produced an aggressin immunity to the bacillus dysenteriae by the injections of its aggressin.

This immunity protected the organism from the bacillus dysenteriae, and was not characterized by the presence of increased bactericidal or agglutinating substances in the serum. This he claimed to be a new kind of immunity.

Equally successful results were obtained by Høke with the diplococcus and by Bail with the typhoid.

At first sight this would seem to be immunity due to the fluid substances, but Kikuchi says:

“The striking appearances observed with the injection (intraperitoneal) employed consisted in the rapid appearance of leucocytes in the peritoneal cavity. In proportion as the serum was weak the entrance of the leucocytes in general was delayed. *Strong phagocytosis was only to be observed in active immunity.*”

From this result it does not show on the surface, otherwise than that the German school, headed by Bail, working on aggressins, has achieved the same results as the English school, headed by Wright, working on opsonins, viz., an opsonic immunity brought about by injection of aggressins. Compare Ref. 12 and 35.

Von Pirquet and Schick (Ref. 37), reasoning from the similarity of results obtained by Bail to those obtained by

themselves with serum in serum sickness, believe his results to be explained not by a new theoretical substance aggressive in quality, but simply to the formation of antibodies.

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Selected Article.

PERIODIC VOMITING WITH ACETONAEMIA IN CHILDREN*

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The clinical picture of the periodic vomiting of childhood with acetonuria is well known on the Continent, especially in France and Italy, but in this country it has not attracted much attention, and I have not been able to find any notice of it in the English medical press before 1905. In America also it has been described as early as 1893 under the various nomenclature of gastric neurosis (Snow, *Arch. of Pediat.*, 1893), persistent vomiting (Rotch, *Pediatrics*, 1901), periodic vomiting (Rochford, *Arch. of Pediat.*, 1897 and 1904), cyclical vomiting (Edsall, *Amer. Journ. of the Med. Sciences*, 1903, p. 629), vomiting with acetoneuria (Marfan). Personally I prefer the term "periodic," and shall use this designation throughout these remarks.

I will now attempt to reproduce the clinical picture. In the midst of perfect health, without apparent or appreciable cause or error in diet or derangement of intestinal action, the child, who is usually of a nervous or arthritic diathesis, is suddenly seized with vomiting. This vomiting is produced by regurgitation without any premonitory nausea, just as in cases of tubercular meningitis, the vomit being usually watery, sometimes alimentary or bilious; but when this latter is noticed, which is not often, it indicates that the end of the attack is approaching. The vomited matter, at first abundant, diminishes by degrees, so that at the end of the attack the stomach is empty. Attacks of this kind of vomiting happen several times a day, and recur with variable frequency, sometimes every quarter of an hour, either spontaneously or excited by movement, such as putting the child to bed or attempts at feeding. The whole attack lasts usually from two to four or five days, but is sometimes prolonged for two or even three weeks, it being impossible to predict the moment when it will come to an end. Once at an end, it leaves no after-effect, and health is immediately re-established without convalescence. Some slight fatigue may be felt for twenty-four to thirty-six

hours, but the child soon regains his cheerfulness, his color returns, he hardly presents the appearance of one who has been seriously ill—the end is as abrupt as the onset. After a very variable interval of time, a few days to a few months, the attacks of vomiting are renewed with the same symptoms, and the illness may thus continue for years, disappearing completely about the time of puberty. Sometimes the attacks recur with striking regularity. Comby (*Arch. de Méd. des Enf.*, 1901) observed a case in which they were repeated regularly every month. The vomiting is always intractable as at first.

The symptoms which are associated with the vomiting are variable. Usually at the onset of the attack the child is prostrate, lies motionless in bed, neither crying nor groaning, its face pale and drawn, the eyes sunken, and the abdomen retracted. Very often there is constipation, appearing at the same time as the vomiting, rarely diarrhea; the tongue is relatively clean or only slightly coated; the pulse is almost always accelerated, although some have noticed a rate of 50-60 per minute; there may be also irregularity. The temperature does not regularly exceed 100.4 deg. F., very rarely reaching 102.4 deg. F.; in exceptional cases it remains normal. Gastric pain is almost always absent, a point of diagnostic importance: when it does occur it is never at the commencement, but only at the end of the attack when the stomach is exhausted and there is nothing more to expel, and even then the pain appears only at the moment of vomiting and ceases in the interval. Thirst is intense, but the child cannot drink, for the least quantity of fluid is sufficient to provoke a fresh attack. A curious fact is that the child, who absorbs very little liquid, can eject such a large quantity by vomiting; the organism becomes dehydrated at the expense of the vomiting, and this dehydration explains the thirst. The appetite is always retained, an important diagnostic point; for in the different gastro-intestinal or other acute affections of childhood vomiting always produces anorexia.

To recapitulate, the abrupt onset, the absence of previous gastro-intestinal disturbance, the absence of anorexia, the absence of gastric pain, the character of the vomiting, the slight elevation of temperature, which has so little relation to the gravity of the general condition which it is associated with, these are the most important signs to be considered in arriving at a clear conception of the affection.

During the attack the breath has a distinct smell of acetone, sometimes so marked as to be noticeable by anyone entering the sick-room. The urine is scanty, and on analysis shows a definite amount of acetone, and often also of indican. Analysis should be made daily from the commencement of the attack; for although the presence of acetone in the urine is a symptom which is never wanting, it does not always occur at the same period of the illness; sometimes it is found at the commencement, at other times not until the end. The fact that acetone is not found throughout the whole duration of the attack explains how certain authors, having analyzed the urine only once, have denied the existence of this symptom; another reason is, that as this disease attacks specially children of the better classes, there is less facility for making constant examinations of the urine than there would be in a hospital.

Marfan and most other observers have, however, always noticed the presence of acetone in the urine (*Arch. de Méd. des Enf.*, 1901).

With regard to this constant presence of acetonemia, it must be remembered that an abnormal quantity of acetone may be found in various affections of the digestive system in children. But it does not lose its importance in this affection merely because it is common to others, and Marfan remarks on this point that acetonemia is the index of a disturbance of nutrition which may be produced under different circumstances. From this point of view it may be compared to glycosuria, and in the same manner it may constitute one of the elements which contribute towards defining a clinical entity. Although we have no precise knowledge of the part that acetone plays in the organism, we may admit that it is a manifestation of a disturbance of metabolism, and that it is this disturbance, the nature of which is at present unknown, that gives rise to this form of vomiting. We must therefore content ourselves with noting the constant presence of acetone without giving any theory as to its origin; in any case it is certain that the acetone is not due to the abstinence from food, since it has been shown to be present at the onset of the attack.

The marked characteristics which these attacks present from a clinical point of view have led to this syndroma of symptoms being considered as a definite morbid entity. Many are agreed on this point, but divergencies of opinion commence when it comes to settling the origin of the vomiting. While Comby and others see in this vomiting a manifestation of the arthritic

diathesis, others ascribe it to a hyperacidity of the gastric juice, and others to the acetoneamia, and others to a neurosis of toxic origin. It is worth while to examine these views more closely.

The theory of Comby (*Arch. de Méd. des Enf.*, 1902), that the attack is a manifestation of the arthritic diathesis, is supported by the following arguments: First, the parents of the patients being as a rule either obese, gouty, or eczematous. No doubt an hereditary arthritic taint is often present, as is shown by the fact that this complaint has a predilection for the richer classes, to whom arthritism is a sort of natural endowment, but it seems venturesome to attribute the condition entirely to this heredity; secondly, the analogy between these attacks of periodic vomiting and those of migraine which occurs in arthritics. This analogy is hardly justified, for although a certain periodicity is a phenomenon common to both, the duration is entirely different, so that whereas the attacks of migraine are essentially transient, lasting a few hours, the crises of periodic vomiting are prolonged usually four or five days; thirdly, the possibility of the attacks of vomiting becoming converted into attacks of migraine. This argument is founded on a few cases reported by Rochford (*Arch. of Pediat.*, 1897, p. 661); numbers of others have been published in which nothing of a similar character has been noticed.

Snow and Whitney (*Arch. of Pediat.*, 1893 and 1898) believe in gastric neurosis, and think that hyperacidity and the absorption of ptomaines can precipitate the attack and increase its intensity.

Edsall (*Amer. Journ. of the Med. Sciences*, 1903, p. 629, and *Arch. of Pediat.*, 1903) believes in a grave acid intoxication of a type frequently met with in diabetes mellitus and occasionally in several other affections, an intoxication whose origin cannot be precisely defined. He examined the blood of an infant affected with periodic vomiting and found it feebly acid, and attributes this loss of alkalinity of the blood to admixture of acid with it. He compares this fact with what happens in diabetic coma, when the increase of acetone, the production of diacetic and oxybutyric acids shows an acid intoxication. According to this observer there are probably two kinds of acidity, one due principally to faulty metabolism, the other due primarily to digestive disorders and exaggerated by disturbances of metabolism. A fact that gives support to

the theory is the success with which he has been able to prevent the development of the attacks by the administration of very large doses of diffusible alkalis. On this theory the acetone is merely the evidence of the existence of various acid toxic bodies, and not the direct cause of the vomiting, for acetone itself in order to be toxic would have to exist in the organism in very much larger quantities than have been found hitherto in the course of this affection.

Griffith (*Amer. Journ. of the Med. Sciences*, 1900, p. 553) bases his idea of a neurosis of toxic origin on the fact that in two of his cases generalized itching accompanied the attack and in another diffuse articular pain followed it. According to him a toxic substance is developed, either in the intestines or in the tissues, which is gradually poured into the circulation, where it accumulates. An attack happens as soon as the limit of tolerance of the organism is passed; the presence of acetone and indican is the proof of the profound metabolic disturbance and of the existence of toxins.

Of the numerous other hypotheses I can mention only a few. The true pathology and etiology of an affection can only be brought to light when the pathological anatomy has explained the clinical symptoms, and this naturally has not been done in the case of a disease like periodic vomiting, which has almost always a favorable issue. In America some autopsies have been published (Griffith, *Amer. Journ. of the Med. Sciences*, 1900, cxx, p. 557), but they are too few to enable definite conclusions to be drawn, rarely lending color to one theory or another.

Rotch (*Arch. of Pediat.*, 1897, p. 678) found an excess of albuminoids in the milk of a mother of a breast-fed infant who was attacked with periodic vomiting. By diminishing the quantity of nitrogenous food in the mother's diet the vomiting ceased.

Rochford and Whitney (*Arch. of Pediat.*, 1898) consider that an hereditary arthritic diathesis, besides producing uric acid, also produces poisonous leucomains closely related to the purin bodies, xanthin, paraxanthin, and heteroxanthin, which are diffusible, whereas uric acid is not; the gradual and periodic accumulation of their substances explain the paroxysmal nervous discharges which cause the vomiting. The disease thus becomes a "lithemic gastric neurosis."

Mery (*Soc. de Péd. de Paris*, 1899) sees in constipation the root of all this evil, but clinical facts do not bear out this

theory, for although constipation is as a rule present, it only makes its appearance during the course of the attack, and is rather to be attributed to the empty condition of the intestines, the result of the repeated vomiting. Since the beginning of 1905, and since the publication by Shaw and Tribe and by Langmead of their cases in the *British Medical Journal* (1905, pp. 347 and 350) two new theories have been brought forward in France by Richardière and by Broca. In the beginning of 1905 Richardière read a paper on the subject before the Société de Péd. of Paris (*La Pédiat. Pratique*, March, 1905, and *Brit. Journ. Child. Dis.*, 1905, p. 229). He attributes these attacks to insufficient function of the liver, being struck with the frequency with which signs of hepatic derangement were present in these cases, which take the form sometimes of single bilious vomiting, sometimes of a subicteric tint of the skin, and at other times of an attack of urticaria. In a certain number of the cases the liver is enlarged, in others it is tender. In several cases the hepatic symptoms have pervaded the clinical picture, the liver has been large and tender, the jaundice marked, the stools white, and the urine bile-stained. Richardière is of opinion that the acetonuria itself, which is the most constant symptom in periodic vomiting, must be considered an hepatic sign indicating that the liver no longer destroys or prevents the formation of acetone in the system, and, according to him, the hepatic theory is capable of explaining the majority, if not the whole, of the cases of periodic vomiting. He states that from this point of view the facts arrange themselves into three groups. In the first are attacks of liver disturbance ending in the crises of vomiting which have as their cause the bilious temperament, family disposition to cholemia, and arthritism. In the second come attacks of periodic vomiting, in which the hepatic reactions are the result of intestinal disturbance, more particularly constipation. The third group comprises cases in which the functional disturbance of the liver is temporary, and determined by the onset of an infectious malady. But it is always the liver, directly or indirectly, which incites the crisis of vomiting. This theory would be seductive, by reason of its simplicity, if it were not based upon ideas as yet insufficiently proved, and it has been combated by Marfan (*La Clin. Infant.*, March, 1905, and *Brit. Journ. Child. Dis.*, 1905, p. 277), who expresses the opinion that attacks of periodic vomiting with acetonemia represent a distinct affection, which runs in

families; it is not uncommon to see a case in a child, and the next day or the day after a brother or sister would be attacked in the same way. He states, moreover, that the vomit is, as a rule, colorless, not bilious, and besides, the presence of bile does not necessarily imply participation of the liver; bile is found in the vomiting of renal colic; enlarged liver is often noticed, but is not constant; jaundice is a rare complication, and is probably secondary, as in pneumonia; hereditary cholemia also is not observed in all the cases.

Hutinel has elaborated and modified the hepatic theory, and rendered it plausible, though not proven. This theory may be thus summed up, as quoted by Giliberti (*Rev. Mens. des Mal. de l'Enf.*, 1905, p. 397): In the normal state toxins are formed in the system, which, partly modified by the liver, are at length eliminated. Each time that, at the end of a faulty action of the digestive system in general, the liver becomes incapable of modifying these toxins, or, if they themselves are produced in abnormal quantity, they then penetrate into the circulation. The reaction which follows is necessarily variable and bears a very limited relation to the organism attacked, for everyone does not react in the same way to the same stimulus. Sometimes this reaction betrays itself by a rise of temperature, sometimes by urticaria, sometimes by nervous phenomena, sometimes by vomiting, etc. The different observers who have studied periodic vomiting, according as they have found themselves in the presence of one of the aforesaid reactions, have attributed the origin of the attack to one organ rather than another.

Hutinel has in effect observed the attacks of periodic vomiting supervene in the course of an ordinary enterocolitis, and has been able to diminish their frequency and prevent them by a rigorous hygienic regimen. He has seen them happen in the case of three little girls who were strongly under the influence of nervous disturbance, and in whom this origin was evident; it was enough for one of them to be attacked with vomiting for the other two to be seized in the same way, just like what happens in chorea or in whooping-cough wards, where, if one child has a paroxysm, its neighbors follow suit. Hutinel has moreover seen, although rarely, periodic vomiting happen without apparent appreciable cause; but he believes that the nervous system plays an important part in these cases because the children in question have an hereditary nervous taint. Periodic vomiting, then, according to him, would not

be morbid entity, but a syndroma appearing in the course of various maladies, from common enterocolitis to hysteria. It may be objected to this theory that the name of periodic vomiting is not applicable to all the cases mentioned by Hutinel, but only to those where the vomiting occurred, as he himself admits, without apparent appreciable result.

The other recent theory is that of Broca (Soc. de Pédiat. de Paris, 1905, February the 14th), who sees in these attacks a manifestation of an undiscovered chronic appendicitis. This observer has seen five cases of children whose illness was diagnosed by competent clinicians as periodic vomiting, and whose symptoms disappeared after surgical intervention. One of his cases was a striking one—a girl, aged 8 years, who since the age of ten months had had attacks of vomiting with acetoneuria every two or three months. A classical attack of appendicitis then ensued, and after it had subsided the appendix, which was large, hard, and the seat of folliculitis, was removed, after which the attacks of vomiting did not recur. The same result happened in the other four cases.

Marfan and Richardière, however, relate cases where just the contrary occurred, where the vomiting continued after the total ablation of the appendix, and maintain that appendicular lesions may co-exist with attacks of periodic vomiting, but that the relation of cause and effect between them is far from being proved.

To sum up, then, the most recent facts about the disease as stated by Comby, who gives statistics of thirty-four cases (*La Clin. Infant.*, March, 1905, and *Brit. Journ. Child. Dis.*, 1905, p. 277), that in two only was the appendix distinctly implicated, twenty-four were girls and ten boys, and the greater number of cases occurred between two and ten years of age. A relation exists between these attacks and those of migraine; sometimes they ceased and were replaced by those of migraine. As antecedents were found—gout ten cases, migraine thirteen cases, neuralgia three cases, and sometimes eczema. Only twice was enlargement of the liver noticed; jaundice was rare. Constipation existed in thirty cases. In six cases the attacks were afebrile. These cases were met with in children of a neuro-arthritic diathesis and among the richer classes. The disease seems therefore to be the effect of some toxic substances, the product, as yet unknown, of a defective metabolism, which accumulates in the tissues, and which, acting on an unstable nervous system whose limit of tolerance is reached, suddenly produces an attack.

Diagnosis is not difficult if we bear in mind the symptoms, the sudden onset, the vomiting without nausea resembling the regurgitation of cerebral affections, the appetite preserved in spite of the alarming general condition, and the smell of acetone in the breath and its presence in the urine. The two chief conditions likely to give rise to difficulty are repeated bilious vomiting and tubercular meningitis. The differential diagnosis from the former is thus given by Ely, quoted by Giliberti (*Rev. Mens. des Mal. de l'Enf.*, 1905, p. 418). In bilious vomiting there is history of errors in diet, action of the bowels is followed by relief, tongue coated, abdomen distended, abdominal colicky pains with increased peristalsis, clay-colored stools, and febrile urine; whereas in periodic vomiting there is no sign of previous indigestion or history of unsuitable diet, action of the bowels gives no relief, the tongue may be clean, the abdomen either normal or retracted, there is no colicky pain and no increased peristalsis, the stools are normal, and the urine contains acetone.

With regard to tubercular meningitis, attention is called to the following points. In periodic vomiting the illness commences suddenly; in tubercular meningitis, on the other hand, there is usually a prodromal stage. The vomiting is obstinately persistent in the former case, but is present only at the beginning of tubercular meningitis, and ceases during its course. The intelligence is always preserved in periodic vomiting, while in tubercular meningitis a sub-comatose condition soon supervenes. In those rare cases of tubercular meningitis where the special nervous symptoms, such as nuchal rigidity and Kernig's sign, are absent, lumbar puncture might be resorted to to settle the diagnosis.

The prognosis is almost always favorable; a fatal issue has been usually due to complications, of which the most frequent is nephritis. Langmead, however, reports a fatal case (*Brit. Med. Journ.*, 1905, p. 350) which occurred in a child in her fifth attack. The liver was large and in a condition of advanced fatty degeneration. Kidneys also fatty. There was no nephritis. The left suprarenal body contained a small wedge-shaped hemorrhagic focus. The mucous membrane of the posterior wall was mottled with dark red areas of hemorrhage. Beyond this there was nothing abnormal to the naked eye. The gastric glands were degenerate, and here also small hemorrhages were seen among the gland tubules. There was nothing that could not be attributed to inanition and fever and

to the terminal convulsions. The large size of the liver and its extreme fatty degeneration were, however, very suggestive.

Treatment has the double object of cutting short the attack and of preventing its occurrence. The only specific treatment founded on a conception of the pathology of the affection is that of Edsall, who considers it due to an acid intoxication. He gives a diffusible alkali such as bicarbonate of sodium in large doses, 15 grains every two hours, or 3 ounces in the twenty-four hours. This somewhat heroic treatment seems to have been successful in other hands. Pierson, for instance (*Arch. of Pediat.*, 1903), claims to have cut short the attack by giving it in what he considers to be a prodromal period. Shaw and Tribe give $1\frac{1}{2}$ to 2 drachms daily in their case (*Brit. Med. Journ.*, 1905, p. 347), with rectal feeding and massage; the case recovered, although, as they state, the vomiting itself seemed to have been more marked while the patient was taking it.

Griffith gave phosphate of sodium without marked success, and all observers are agreed as to the advisability of regulating the diet and bowels, and of improving the general condition by hydro-therapy, exercises, and fresh air. Marfan states that injections of morphine have proved beneficial in allaying the vomiting, and recommends giving alkalies in some form or other combined with bromide of sodium, under which treatment the attacks have been observed to become shorter and less severe.

Progress of Medical Science.

MEDICINE.

IN CHARGE OF W. H. B. AIKINS, H. J. HAMILTON, C. J. COPP
AND F. A. CLARKSON.

Syphilis, Aortic Lesions, Tabes Dorsalis and Babinski's Sign.

The co-existence of tabes dorsalis and aortic lesions in the same person has for some time been a matter of experience, but the relation between the two states has been variously interpreted. Some look upon the one as the cause of the other. Grasset regards the disease of the spinal cord as primary. Berger and Rosenbach, who were among the first to show the co-existence of the two conditions, did not give any opinion as to the relation between them. Raynaud, Leyden, Borgberine, consider the co-existence as simply a fortuitous complication, or at the most, due to the cause which has produced the tabes.

Ruge and Huffner recently published 138 cases of tabes. Among these they found twelve with cardiac lesions (8.7 per cent.). Of these nine were cases of aortic insufficiency, two of mitral insufficiency, with slight changes in the aortic valves, one case of mitral stenosis. In the greater number of the cases there was a previous history of syphilis. There was such a history in exactly eleven of the twelve cases where the tabes co-existed with cardiac lesions. Their opinion was that syphilis was the cause of both diseases. Oppenheim held the same view. Recently Lamberger, out of ten cases of tabes associated with cardiac lesions, found aortic insufficiency nine times.

From all these observations we may make the following deductions:

1. If, in a case of tabes, there appears a cardiac lesion, it is almost always an aortic lesion.

2. Between tabes and aortic insufficiency there exists a frequent relation, in the sense that they are found associated in patients suffering from syphilis.

Now, granted such a coincidence, may we claim, as some authors do, that the aortic insufficiency is the result of a trophic disturbance of nervous origin, analagous to those other disturbances which we find in so many organs, in cases of tabes? In general, we must consider as the cause of the aortic valvular

lesions the action of syphilis, which at the same time has produced the tabes.

At other times we meet aortic lesions and syphilis, without ataxic phenomena, but with indications of a syphilis of the nervous system. Examining the pupils we find the Argyll-Robertson sign or perhaps a slight inequality of the pupils; the patellar reflexes are but little changed. The syphilis of the nervous system is shown in an abundant leucocytosis of the spinal fluid.

The combination of these symptoms—the aortic lesion, the pupillary changes, the lymphocytosis of the spinal cord—constitutes Babinski's sign. The existence of such a combination ought to make one suspect syphilis as the common cause. Moreover, the systematic search for such a cause in all aortic cases will often bring to light some lesion of the nervous system previously undiscovered. It is not necessary, therefore, to attribute pupillary changes in a case of aortic lesion to a pressure caused by aneurysm. The diagnosis of aneurysm cannot be established on the basis of inequality of the pupils or unilateral Argyll sign in an aortic case. Syphilis must be considered as a cause, and this has its practical importance. Specific treatment must be instituted. An aortic lesion with pupillary changes must be treated with mercury. In such treatment we must, however, be prudent, since cases of syphilitic aorta have sensitive kidneys. To submit them to a vigorous mercurial treatment might give rise to grave renal disturbances.—Translated from *Giornale Internazionale delle Scienze Mediche* by HARLEY SMITH.

SURGERY.

IN CHARGE OF EDMUND E. KING, GEORGE A. BINGHAM, C. B. SHUTTLEWORTH
AND F. W. MARLOW.

Pelvic Appendicitis

In the *British Medical Journal* of Jan. 13th, 1906, there appears some interesting and valuable clinical remarks by Dr. George E. Armstrong, of Montreal, on pelvic appendicitis and the importance of rectal examination in such cases. He points out the fact that owing to uncertain diagnoses, operation is often too long delayed, for, though there is the usual sudden onset, generally attended by nausea and perhaps vomiting, the pain is often more generalized and tenderness on pressure is

more marked over the pelvic than the iliac region, and there is only a moderate elevation of temperature and acceleration of pulse. Under such circumstances the diagnosis is often uncertain and delay is attended in from twenty-four to forty-eight hours by improvement, but often after a period of two, three or four days, there occurs a sharp recrudescence, with rapid development of peritonitis.

In all suspected cases where the diagnosis of appendicitis can not be definitely made by abdominal examination, Dr. Armstrong advises as a routine measure rectal and bimanual examination, claiming that in cases of pelvic appendicitis it is often possible to palpate a tender mass per rectum and bimanually, or to elicit distinct tenderness without the presence of a mass, and so to make the diagnosis definite. Several cases are quoted in which the diagnosis was made in such manner. Study of these and the employment of the method advised will readily convince any one that the advice is commendable. Perhaps too much stress has been placed upon the so-called "McBurney's point." For a practical knowledge it would be more advantageous to forget any such point and remember that the direction of the appendix is subject to variations, the three most common directions in their relative order being the "north-east," the "south-east," and the "north," and that the most tender point should be one at which the appendix may be directly pressed upon. In view of this it must be admitted that if the appendix lies in the "south-east" direction, with its tip hanging down into the pelvis, and if it be the distal portion which is diseased it will often be difficult to elicit distinct tenderness per abdomen, and in such cases it should, as a rule, be possible to do so per rectum. F. W. M.

On Gastric Carcinoma.

Not long since the percentage of cases in which carcinoma supervened upon gastric ulceration was regarded as being little more than six. Much has been learned of late with regard to the pathology of certain diseases, and especially those of the stomach, the gall-bladder, the bile ducts, the pancreas, and the appendix, from what Professor Hans Kehr has designated "pathological-anatomical studies *in vivo*," meaning thereby a study of conditions found to exist during the performance of operations.

It is interesting to note in this connection that Mr. Moynihan, of Leeds, in "a review of a series of operations for cancer

of the stomach" (*British Medical Journal*, Feb. 17th, 1906), states that in the last twenty-two patients of the series submitted to the operation of gastro-enterostomy, and from whom careful enquiry was made, there was a history of previous gastric ulceration in sixteen, or over 72 per cent. In seventeen other cases undergoing gastrectomy, gastrostomy, or jejunostomy, this feature was recorded in eight. In twenty of his earliest cases the history of gastric ulceration was either not enquired for or its presence or absence was not recorded. Thus in the whole series thirty-nine cases showed such a pre-existing condition in twenty-four, or over 61 per cent.

Such circumstances as these alone, apart from various other indications, should warrant the early employment of operative procedures in cases of intractable gastric ulceration. Though Mr. Moynihan regards an exploratory operation as a confession of diagnostic failure, yet he asserts that with present clinical methods, positive recognition of cancer of the stomach in its early stage, that is, in the stage when it could be completely eradicated, is almost impossible, and he advocates that if the clinical history of a case is such that suspicions created at the first are not quickly allayed or definitely explained in a complete clinical investigation, an exploratory operation should be undertaken for the purpose of making the diagnosis. In this regard he thinks it probable that, as in other matters, the comparison of the history and of the conditions revealed at operation will lead by degrees to greater assurance in diagnosis.

F. W. M.

Functions of the Omentum.

Most surgeons who in their operative technique are careful to expose to view the parts concerned in an abdominal operation have been impressed by the almost unfailing presence of omentum. More especially has this been so in connection with the localization of inflammatory processes, though from its frequent presence in hernial sacs and in many such cases entirely blocking the hernial ring, it would appear to protect the abdominal viscera in other ways as well.

In the *British Medical Journal* of Jan. 13th, 1906, there appears a short paper on this subject by Mr. Rutherford Morrison, of Newcastle-on-Tyne, whose observations on the omentum have been deduced from a large operative experience. The paper consists largely of some seventeen diagrammatic drawings which serve well to illustrate the tendency and capa-

bility of the omentum to migrate to the seat of any trouble within the peritoneal cavity.

The drawings illustrate the normal omental apron and the performance by the omentum of the following functions: Occluding the sac of a femoral, an inguinal, and of an umbilical hernia; occluding a hole in the diaphragm; guarding a suppurating gland in the mesentery of the small intestine; isolating a suppurating gall-bladder; isolating the appendix in the iliac fossa, the pelvis or the flanks; guarding malignant ulcers of the colon or rectum; surrounding an injured piece of small intestine; sealing an ulcer of the stomach and one of the duodenum, and isolating a pelvic tumor, such as a degenerating myoma, an ovarian cyst, an ectopic gestation, or a pyo-salpinx.

Mr. Morrison believes there is something more than a mechanical causation in the movement of the omentum, and likens its movement to that of a jelly-fish. His paper demonstrates clearly the vast importance of the omentum from the point of view of protection, and most surgeons will readily recall peculiar instances in which the omentum seemed to be the saving factor in the case.

F. W. M.

The Choice of Method in Operating Upon the Hypertrophied Prostate.

Dr. Willy Meyer, in *Medical Record*, October 7th, 1905, says:

There has been much bickering, of late, among surgeons, as to which of the three operations, Bottini's, suprapubic, prostatectomy and perineal prostatectomy is the best. Surgeons vie with each other in announcing the respective mortalities of their favorite method. Meyer's standpoint is that all three are of value; each has its advantages and disadvantages and its own indications. The Bottini operation is reserved for patients who refuse the cutting operation, and for carcinoma. Meyer admits, however, that the ultimate functional result is not as good after this operation as after the other two, and prefers to do a cutting operation when he can. Between the suprapubic and the perineal methods Meyer believes that up to the present the choice is largely an individual one, depending on the experience and personal skill of the operator. The number of cases that have been operated upon up to the present, is still too small to permit of forming exact indications for deciding upon one or the other method. The author has summarized the following indications, based upon present experi-

ences: 1. Glands palpable per rectum and rising not far from the sphincter can be advantageously attacked from below. 2. If situated higher up, they should be enucleated from above, especially if the cystoscope has shown the presence of a median lobe. 3. An hypertrophy of soft character in the early stages is best attacked from below. 4. In 33 per cent. of the cases, where no tumor is palpable per rectum, and where the enlargement can be diagnosed only by the symptoms and by cystoscopy, the suprapubic route is preferable. 5. If the hypertrophy is accompanied by calculus, especially by one that is too large to permit of removal through the internal sphincter, the suprapubic route is indicated. 6. If the urine is foul, requiring immediate drainage, it is better to operate from above; the extirpation can be done at a second sitting. 7. The comparatively frequent appearance of carcinoma of the prostate may prove to become an important factor in deciding in favor of complete removal suprapubically. In Meyer's experience the suprapubic operation is less frequently attended by loss of sexual function than the perineal. This question must be decided by future experience and if this opinion is corroborated it may be an additional factor in deciding on the suprapubic route. Cystoscopy must be done before performing the Bottini or the perineal operation. For the suprapubic route it may be dispensed with. It should never be neglected in cases where no enlargement is palpable per rectum. The time for operation arises when regular catheterization has become imperative. The only exception is in the cases of well-to-do patients, who can command the time and proper asepsis for catheterization. As a result of Meyer's observations, he recommends that surgeons should familiarize themselves with all three operative methods, because no one method can be employed in all cases to the best advantage of the patients.

The Treatment of Peritonitis.

Friederich emphasized that the variability of the prognosis depended largely on the variation in etiology. There is only one contraindication to operation in acute diffuse peritonitis and that is beginning paralysis of the medullary centres (cyanosis, imperceptible pulse, cold extremities). He advocates heated tables, light general anesthesia, preferably ether, no evisceration, enterotomy only when the distension is extreme. The location of the incision will depend on the diagnosis. After-treatment consists of lavage, salts, large quantities of salt solution, artificial alimentation. Krogius insists

on early operation. Irrigation is indicated only where chemically harmful fluids (such as stomach contents, or food particles) are found in the peritoneal cavity. He believes in free packing (Mikulicz tampons), counter-incisions in Douglas' pouch, the loin, etc. If later symptoms of obstruction develop, he makes an enterostomy after the method of Witzel. Lennander considers intestinal paresis the chief danger and consequently performs enterotomy, or in extreme cases resects $\frac{1}{2}$ -2 meters of paralyzed intestine. He uses a cigarette drain. Post-operatively this surgeon has great faith in large saline injection, and in subcutaneous alimentation of sterile olive oil or solutions of sugars. Lejars spoke of the less common causes of the infection, such as those through the female generative tract, blood infections, etc. He mentioned recent attempts to use horse serum and nucleic acid to increase the resistance and promote leucocytosis. Although on principle opposed to irrigation, he finds it of use where the infection is diffuse and no adhesions have formed. The Fowler position appeals to him, and also all methods for evacuating the intestinal contents. McCosh refuses to operate on moribund patients as interference only hastens the fatal result. He has grown more conservative and operates only in about 50 per cent. of all cases. When operation is undertaken great speed is essential, one-half hour being the maximum duration of operation. Light chloroform anesthesia is preferred; small incisions, evacuation of the fluid, removal of the etiological factor; irrigation only if the infection is very diffuse, application of a cigarette drain. McCosh rejects enterostomy, frequently uses injections of concentrated solutions of magnesium sulphate into the gut, and considers tamponing injurious. The Fowler position has its advantages. Twenty-seven per cent. of cases, which surely would have died if operated upon, recovered under medical treatment.

Dudgeon and Sargent took up the bacteriology of the subject. Colon bacilli are the most frequent and fatal, but *b. pyocyaneus* and *streptococcus pyogenes* also cause grave inflammations. The *b. coli* become very virulent in diseased gut, hence their hypervirulence in strangulations, etc. The *staphylococcus albus* increases leucocytosis and hence if found in combination with the other varieties it improves the prognosis. In streptococic peritonitis irrigation is indicated; in *b. coli* infection, limited operation. In diffuse infections drainage proves of little value. Purgation is important. Temoin drains only when there are raw surfaces capable of producing pus.—*Am. Jour. of Surgery.*

Editorials.

CANADIAN HOSPITALS IN INDIA AND CHINA.

Twice within the past month the CANADIAN PRACTITIONER has been asked to assist in finding physicians for India and China. Appointments are open in two important Mission Hospitals, and women physicians especially are urgently required. The Woman's Missionary Society of the Methodist Church has an important work in West China and wishes to send out a doctor at once.* The Zenana Bible and Medical Mission† (interdenominational), which is the oldest society working among the women and girls of India, has now a Canadian auxiliary, which supports a hospital at Nasik, in the Bombay Presidency. The work in this hospital has increased so greatly that the doctor must have an assistant, and naturally the Auxiliary wishes to send out a Canadian doctor. The work in Nasik is not only large, it is successful, and acceptable to the people, who have themselves provided the hospital building and grounds. One of the Hindu patients said of the hospital: "That is the house where those who enter weeping, leave it laughing."

DEAN GEIKIE'S SEMI-CENTENARY.

In 1856, just fifty years ago, Dr. W. B. Geikie became Professor of Materia Medica in Victoria University, Cobourg, in which institution he afterwards held the chairs of Anatomy, Surgery, and Midwifery. In 1870 he became Professor of Medicine and Clinical Medicine in the Medical Faculty of Trinity University, Toronto, a position which he held until the confederation with the Medical Faculty of the University of Toronto occurred. He was Dean of Trinity Medical College

* Further information may be obtained from Mrs. Strachan, 50 Markland Street, Hamilton.

† Further information may be obtained from Mrs. Hodgins, 92 Pembroke Street, Toronto.

from the year 1878, and in every way identified himself with the College and its interests.

Dr. Geikie belongs to an Edinburgh family and the distinguished Biblical scholar, the late Dr. Cunningham Geikie, was his brother. He came to Canada in 1843, and was licensed to practice medicine by the Medical Board of Upper Canada in 1851. Dr. Geikie also holds the degree of M.D. from Jefferson College, Philadelphia, and is L.R.C.P. Lond. and F.R.C.S. Edin. He received the honorary degree of D.C.L. from Trinity University in 1889. Dr. Geikie has always taken an active interest in religious and philanthropic work in Toronto, and is one of the best-known medical practitioners in Canada.

A pleasing incident marked Dean Geikie's semi-centenary, on the occasion of his acting as presiding examiner for the Trinity students who, having registered before amalgamation, were writing on their finals at Trinity University. Before the examination began, these students took the opportunity to present him with an address and a gold-headed cane, suitably inscribed. The address expressed their appreciation of Dean Geikie's services to medical education and his devotion to Trinity.

THE SAN FRANCISCO CATASTROPHE.

The earthquake and fire which destroyed the fair city of San Francisco will be remembered in history among the most appalling disasters of modern times. Of the sufferings of every citizen of that city, the loss of those who lost all, and the heroism with which they bore it and turned so soon to the herculean task of re-building what had been swept away in a moment, one can hardly speak adequately.

Few physicians in Ontario had not friends or acquaintances in or near San Francisco. Many had relatives about whose safety they were anxious, and it was, therefore, a great relief when accounts came from Dr. Philip M. Jones and Dr. D. W.

Montgomery of the safety of many physicians and others known in Ontario:

The President of the San Francisco County Medical Society estimates that about one thousand physicians have lost offices, books, instruments, in fact, everything, and great efforts are being made by the profession to assist them. Members of the different medical associations have already subscribed some thousands of dollars; one medical society has voted to omit the annual banquet and give the money for the benefit of their colleagues in San Francisco, and the women physicians of Philadelphia gave a benefit for the women physicians of San Francisco in the Broad Street Theatre on May 29th.

In San Francisco itself, considering the great danger of the city from a sanitary point of view, with sewers and water supply practically gone, the condition is excellent.

The death-rate, it is true, is double the normal number, but there are only 47 cases of contagious disease in the city, chiefly measles and scarlet fever. No cases of typhoid have yet been reported, but a typhoid hospital for 1,200 patients has been erected in Golden Gate Park. On the day of the disaster only one out of the three City Emergency Hospitals (the Harbour Emergency) escaped. A temporary Emergency Hospital was established by utilizing the Mechanics' Pavilion. This, too, was burned and had to be abandoned, but the patients were all taken in safety to the Presidio, the German Hospital, and the California Women's Hospital. The city has been divided into three sanitary districts, under the charge of Drs. Jones, Barbat and Williamson, each of whom is aided by a staff of physicians and inspectors, who make house-to-house inspections daily and see that sanitary instructions are carried out. Thus the medical profession have ably seconded the heroic efforts of the military and civil authorities, and have done nobly, nurses and doctors remaining on duty at hospitals till ordered to leave by the military, and aiding in every way in the work of rescue and re-organization.

THE BRITISH MEDICAL ASSOCIATION.

TORONTO MEETING, AUGUST 21ST. TO 25TH, 1906.

Considerable progress has been made with the arrangements for that notable event, the meeting of the British Medical Association in this city in the closing part of August. From the enquiries that are being received from every part of the continent, as well as from the British Isles, it is evident that a very large attendance will be recorded at this meeting. Over 200 members resident in the British Isles have already asked for accommodation, and in many cases they will be accompanied by members of their families. The Association will be convened under thirteen sections, which will meet daily from 9.30 to 1 o'clock. The afternoons and evenings will be devoted to general meetings, public addresses and various entertainments. There will be three public addresses delivered. Sir James Barr will present the address in Medicine, his topic being, "The Circulation Viewed from the Peripheral Standpoint." Dr. W. S. A. Griffith will deliver the address in Obstetrics, Sir Victor Horsley the address in Surgery, and it is just possible that a public address will be delivered by Dr. Marie, of Paris. It is intended that clinics shall be held each morning at 8.30, when interesting cases will be reviewed by some of the prominent physicians and surgeons in attendance. Considerable advance has already been made in arranging for the work of the sections.

Anatomy.—The section of Anatomy will be under the presidency of Dr. Arthur Robinson, of Birmingham. Papers have been promised by the following: Dr. C. R. Bardeen, University of Wisconsin, Madison, Wis.; Prof. G. C. Huber, University of Michigan, Ann Arbor, Mich.; Prof. J. P. McMurrich, University of Michigan, Ann Arbor, Mich.; Dr. Ross E. Harrison, Johns Hopkins, Baltimore, Md.; Dr. H. Knower, Johns Hopkins, Baltimore, Md.; Dr. G. L. Streeter, Johns Hopkins, Baltimore, Md.

It is also possible that Prof. Mall, of Johns Hopkins, Baltimore; Prof. C. S. Minot, Harvard Medical School, Boston; Dr. E. A. Spitzka, New York, and Dr. R. R. Bensley, of Chicago, may communicate papers.

Laryngology and Otology.—The section of Laryngology and Otology will be under the presidency of Dr. J. Dundas Grant, of London, and will have three or four principal topics for discussion:

1. "Operations for the Correction of Deviations of the Nasal Septum." (Discussion to be opened by Dr. St. Clair Thompson, of London.)

2. "Laryngeal Disturbances Produced by Voice Use."

3. "The Indications for Ligation of the Jugular Vein in Otitic Pyemia."

4. "The Diagnosis and Treatment of Ethmoidal Disease."

Each discussion will occupy about two and a half hours, the remainder of the day being devoted to papers. It is just possible that Dr. Logan Turner will open the discussion on "Ethmoidal Disease."

Medicine.—Tuesday, Aug. 21st: "Blood Pressure in Its Relation to Disease." (a) Physiological Introduction (Dawson, of Baltimore). (b) Clinical Methods of Determining Blood Pressure; Their Uses and Limitations (Geo. Gibson, Edin.). (c) Pathology and Therapeutics of Blood Pressure (Sir Wm. Broadbent). Also possibly a paper on the subject by Clifford Allbutt, and one or two others, including one Canadian.

Wednesday, Aug. 22nd: Discussion in junction with the section of Physiology upon "Over and Under Nutrition, with Special Reference to Protein Metabolism." Introduced by Chriddenden. Other special speakers: Herter, Starling, Hutchison, Francis Hare, A. Haig, and others.

Thursday, Aug. 23rd: Papers from William Osler, J. Mackenzie, and Erlanger on "Heart Block." Other papers: L. F. Barker, A. Stengel, A. McPhedran.

Friday, Aug. 24th: Papers devoted to neurological subjects. W. G. Spiller, "Syringomyelia." J. J. Putman.

The following gentlemen have signified their intention to contribute to the section: Dr. J. J. Putman, Boston, Mass.; Dr. W. G. Spiller, Philadelphia, Pa.; Dr. Alfred Stengel, Philadelphia, Pa.; Dr. Barber, Baltimore, Md.

Obstetrics and Gynecology.—The section of Obstetrics and Gynecology is under the presidency of Dr. A. H. Freeland Barbour, of Edinburgh. The following is the programme suggested:

Tuesday—Discussion on "Hyperemesis Gravidarum." Opened by Dr. J. C. Cameron, Montreal.

Wednesday—"The Changes in Uterine Fibroids after the Menopause, with Special Reference to Operations."

Thursday—Subject for discussion and opener to be selected by Dr. Barbour.

Papers—"Uterine Myomata and Their Degenerative

Changes," T. S. Cullen; "Sectional Anatomy of Labor," (lantern demonstration), A. H. F. Barbour; "Condition of Ovaries in Normal and Abnormal Pregnancy," C. Lockyer (lantern demonstration).

Surgery.—The section of Surgery is under the presidency of Sir Hector Clare Cameron, M.D., Glasgow. The following is the programme suggested:

Tuesday—"Enucleation of the Prostate Gland." Reader, Dr. Bingham, Toronto.

Wednesday—"Treatment of Ascites Secondary to Chronic Hepatitis."

Thursday—"Surgical Treatment of Ulcer of the Duodenum." Reader, Dr. W. J. Mayo, Rochester, Minn.

Friday—"Treatment of Acute Septic Peritonitis."

Pediatrics.—The section of Pediatrics is under the presidency of George A. Sutherland, M.D., London. The following is the programme suggested:

Tuesday—Discussion on "Congenital Pyloric Stenosis." The medical aspect of the subject will be introduced by Dr. Edmund Cautley, London, and the surgical aspect by Dr. Harold Stiles, Edin.

Wednesday—Discussion on "Pneumococcal Infection." The medical aspect will be introduced by Dr. Henry Ashby, Manchester.

Thursday—A Symposium on "Enterocolitis." The subject will be taken up under the following headings: (a) Etiology, (b) Pathology, (c) Symptoms, (d) Diagnosis and Prognosis, (e) Medical Treatment, (f) Dietetic Treatment.

Friday—A Discussion on "Rheumatism."

Psychology.—The section of Psychology is under the presidency of Wm. Julius Mickle, M.D., London. It has been arranged to have four discussions, one each day of the sectional meetings. The subjects are:

Tuesday—"General Paresis."

Wednesday—"Classification of Insanity."

Thursday—"So-called Mental Degeneracy."

Friday—"Dementia Precox."

The leaders and those chosen to discuss these subjects will be eminent British, American and Canadian psychologists, and the President, Dr. Mickle, is expected to present the first paper, as he is a recognized authority on general paresis. The second subject chosen will be one of great interest to both countries, as it is a question now under general discussion.

A series of papers will also be presented by eminent men,

and the following Canadians have already signified their intention to take part: Dr. C. K. Clark, Toronto; Dr. Ryan, Kingston; Dr. Moher, Brockville; Dr. Sherris, Montreal; Dr. Daniel Clark, Toronto.

State Medicine.—The section of State Medicine is under the presidency of Dr. F. Montizambert, of Ottawa. The following programme has been arranged:

Tuesday—"The Prevention of Tuberculosis."

Wednesday—"Water Supplies."

Thursday—"The Hygiene of Homes and Educational and Industrial Institutions."

Friday—"International Sanitary Protection."

Guests.—Prof. Brouardel, member of the Institute and the Academy Medicine of France; Dr. Mattin, City Health Officer of Paris, France; Dr. Letulle, Prof. of the Medical Faculty of Paris; Dr. Liceaga, Sanitary Adviser of the Government of Mexico, Mexico; Dr. Wyman, Surgeon-General of the United States Public Health and Marine Hospital Service, Washington.

Therapeutics.—The section of Therapeutics is under the presidency of Donald MacAlister, M.D., Cambridge. The following is the programme arranged:

Tuesday—The Study of the Kidney: (a) Its Physiology and Pharmacology; (b) The Therapeutics of Acute Nephritis; (c) The Treatment of Chronic Nephritis; (d) The Treatment of Uremia.

Wednesday—"Serum Therapy."

Thursday—"The Place of *Materia Medica* and Therapeutics in the Medical Curriculum," Dr. A. D. Blackader, Montreal; "The Teaching of Pharmacology"; "The Teaching of Therapeutics."

Pathology and Bacteriology.—The section of Pathology and Bacteriology, under the presidency of Professor J. G. Adami, M.D., F.R.S., Montreal, have made the following preliminary arrangements:

Tuesday—"Nuclear Physiology and Pathology." To be opened by Professor Adami and Dr. Macallum.

Wednesday—"Etiology and Life-History of Malignant New Growths."

Thursday—"The Forms of Arteriosclerosis, Their Classification and Experimental Production."

Friday—Papers upon "Pathogenic Protozoa" by various workers. Papers have been promised by Prof. Aschoff, Marburg, Germany; Prof. Novy, Ann Arbor; Dr. Pearce, Bender

Laboratory, Albany; Dr. Bushnell; Prof. Grunbaum; Prof. Calder Leith; Dr. Oskar Koltz, Montreal; Prof. J. J. Mackenzie, Toronto.

The American Association of Pathologists and Bacteriologists have been formally invited to be present, and a number of the members will likely attend.

Dermatology.—This section will meet under the presidency of Dr. Norman Walker, of Edinburgh, who will open the section by an address on “The Teaching of Dermatology.” During one of the days of the meeting there will be a discussion on the subject of “Eczema,” to be opened by Dr. A. J. Hall, of Sheffield, Eng. A paper on “Psoriasis and Light” has been promised by Dr. J. N. Hyde, of Chicago. Papers will also be given by Dr. Gilchrist, Baltimore; Dr. A. R. Robinson, New York; Dr. Elliott, New York.

Physiology.—The section of Physiology will meet under the presidency of Professor W. D. Halliburton, M.D., F.R.S., London. The following programme has been arranged:

Discussions: (1) Discussions in junction with the section of Medicine on, “Over Nutrition and Under Nutrition, with Special Reference to Proteid Metabolism in Health and Disease”; (2) Discussion in junction with the section of Pathology on, “The Role of the Nucleus in Nutrition.”

Papers: Dr. S. P. Beebe, New York, on “Serum under the Influence of Injected Nucleo-proteid”; Prof. T. G. Brodie, F.R.S., London, on “The Functions of the Renal Tubules and Glomeruli”; Prof. F. Gotch, F.R.S., Oxford, on “Demonstration of the Sphinthariscopes”; Prof. W. B. Hall, Chicago, on “New Apparatus”; Prof. W. D. Halliburton, F.R.S., London, on “Proteid Nomenclature”; Prof. C. F. Hodge, Worcester, Mass., on “Structures and Physiological Functions of Amoeba Proteus”; Profs. C. F. Hodge and M. F. Duncan, Worcester, Mass., on “Differentiation of Contractile Protoplasm”; Prof. W. H. Howell, New York, on “Physiology of Heart”; Prof. G. C. Huber, Ann Arbor, on “Physiology of Renal Tubules”; Dr. G. T. Kemp, Champaign, Ill., on “Blood-platelets”; Dr. Louis Lapieque, Paris, on “Electrical Excitation of Nerves and Muscles”; Prof. J. S. Macdonald, Sheffield, on “Structure and Functions of Nerve Fibres”; Prof. J. J. R. MacLeod, Cleveland, on “Experimental Glycosuria”; Dr. Gustav Mann, Oxford, on “A Plea for Micro-physiology”; Prof. B. Moore, Dr. M. Edie, Dr. Spence, and Dr. H. E. Roaf, Liverpool, on “Experimental Glycosuria”; Prof. B. Moore, E. Whitley, and Dr. H. E. Roaf, Liverpool, on “Effect of Ions on Growth and

Cell Division"; Dr. F. W. Mott, F.R.S., London, on "The Functional Significance of the Convolutional Pattern in the Primates"; Dr. Maurice Nicloux, Paris, on "Chloroform Anesthesia and a Simple Method of Estimating Chloroform"; Prof. C. S. Sherrington, F.R.S., and Dr. H. E. Roaf, Liverpool, on "Lock-jaw"; Prof. F. S. Lee, New York, on "The Causes of Fatigue in Certain Pathological States."

Papers are also promised by the following: Dr. Harvey Cushing, Baltimore; Dr. P. T. Herring, Edinburgh; Dr. F. G. Hopkins, F.R.S., Cambridge; Prof. Waldemar Koch, Columbia, Mo.; Dr. S. J. Meltzer, New York; Dr. Sutherland Simpson, Edinburgh; Prof. L. B. Mendel, New Haven; Prof. Porter, Boston; Prof. Jacques Loeb, Berkeley, Cal.

Ophthalmology.—The section of Ophthalmology will meet under the presidency of Robert Marcus Gunn, F.R.C.S., London. The following provisional programme has been arranged:

Tuesday—"Rare Forms of Choroiditis."

Wednesday—"Sympathetic Ophthalmia."

Thursday—"Affections of the Lacrimal Passages."

Friday—"Visual Tests for Marine and Railroad Service."

Most of the buildings of the University will be utilized in connection with the meeting. On the ground floor of the Main Building, in addition to the Post Office and Reception Rooms, there will be rooms for the regular meetings of some six or eight sections. The second floor, in addition to special offices for the Secretary and the Editor of the *British Medical Journal*, will be devoted almost entirely to the Museum, which will afford some 12,000 square feet for exhibitors. Already a large amount of this space has been disposed of to leading manufacturers of instruments and drugs in Great Britain, the United States and Canada. This alone will be one of the most interesting parts of the Association to Canadian visitors. Accommodation for other sections will be provided in rooms closely adjoining the Main Building. It is expected that the new Convocation Hall will be completed in sufficient time to enable the ceremonies of the official reception, on the evening of the 21st of August, and the public addresses, to take place there. Already the Committee is actively engaged in providing accommodation for the host of visitors that is expected. Queen's Hall, Wycliffe College, Annesley Hall, the Fraternity houses, and other buildings adjacent to the University will probably be utilized, and many of the citizens are already offering their hospitality.

The Committee on Entertainment have a most excellent programme prepared, one of the interesting features of which will be an excursion to Niagara Falls at the invitation of Sir Henry Pellatt. Owing to the exceptionally favorable travelling rates which have been obtained over the Canadian lines of steam and rail, the attendance will be made very easy, and physicians wishing to avail themselves of the privileges of this meeting should communicate with the Secretaries at an early date, in order to obtain accommodation.

The following is a list of some of the prominent English members who will attend the meeting of the British Medical Association:

Allbutt, Prof. Clifford, F.R.S., St. Radegund's, Cambridge.

Regius Professor of Medicine, Cambridge.

Armour, Donald, Esq., F.R.C.S., 89 Harley St. W. Son of Judge Armour.

Ashby, Dr. Henry, 13 St. John St., Manchester. An authority on diseases of children.

Barbour, Dr. A. H. F., 4 Charlotte Sq., Edinburgh. Son-in-law of the late Hon. Geo. Brown. An authority on obstetrics.

Barlow, Sir Thomas, Bart., K.C.V.O., M.D., 10 Wimpole St. W. The King's physician.

Barnes, Dr. Herry, LL.D., 6 Portland Place, Carlisle. Ex-President, and an authority in obstetrics.

Barr, Sir James, M.D., 72 Rodney St., Liverpool. President of section in medicine.

Bradford, Prof. J. Rose, M.D., F.R.S., 8 Manchester Sq., W. An authority in medicine.

Broadbent, Sir William, Bart., K.C.V.O., M.D., 84 Brook St. W. An eminent authority on the heart.

Browne, Dr. Langley, Moore House, West Bromwich. President of Council of British Medical Association.

Buzzard, Dr. E. Farquhar, National Hospital, Queen Sq., W.C. An authority on nervous diseases.

Cameron, Sir Hector Clare, M.D., 200 Bath St., Glasgow. One of Scotland's famous surgeons.

Gibson, Dr. G. A., 3 Drumsheugh Gardens, Edinburgh. A representative of the Royal College of Physicians, Edinburgh.

Griffith, Dr. W. S. A., 96 Harley St. W. An authority on obstetrics.

- Halliburton, Prof. W. Dobinson, M.D., F.R.S., 17 Marylebone Road, N.W. One of the world's most able physiologists.
- Hersley, Sir Victor, F.R.S., 25 Cavendish Sq. W. Whose name is famous in brain surgery.
- Lawford, Dr. J. B., 99 Harley St. W. A noted oculist.
- MacAlister, Dr. Donald, D.C.L., Barristers, Lady Margaret Road, Cambridge. The eminent Cambridge professor.
- Manby, Sir Alan Reeve, M.V.O., M.D., East Rudham, Norfolk. Already well known to some Toronto people.
- Mickle, Dr. W. J., Grove Hall Asylum, Bow E. A Toronto boy who has become an authority as an anatomist.
- Osler, Prof. W., M.D., F.R.S., 7 Norham Gardens, Oxford. Too well known here to need description.
- Roaf, Dr Herbert E., Bio-Chemical Dept., The University, Liverpool. One of Toronto's sons doing good work in Liverpool.
- Robinson, Prof. Arthur, M.D., The University, Liverpool. A well-known anatomist.
- Sherrington, Prof. C. S., M.D., F.R.S., Physiological Laboratory, The University, Liverpool. Already well-known in Toronto.
- Woodhead, Prof. G. Sims, M.D., F.R.C.S.E., 6 Scroops Terrace, Cambridge. An eminent pathologist.

DISTINGUISHED FOREIGNERS WHO WILL BE PRESENT.

- M. le Docteur Delezenne, Directeur du Laboratoire de Physiologie de l'Institut Pasteur, 25 Rue Dutot, 15^e Arrondissement, Paris.
- M. le Docteur L. Lopicque, 6 Rue Dante, 5^e Arrondissement, Paris.
- M. le Docteur M. Nicloux, 107 Rue Mouge, Paris.
- Professor Justus Gaule, University of Zurich.
- Professor Max v. Frey, University of Wurzburg.

TRANSPORTATION ARRANGEMENTS FOR THE BRITISH MEDICAL ASSOCIATION.

1. *Fares, Going Dates and Limits.*—(a) Domestic Business, Certificate Plan Arrangements; free return regardless of number in attendance. Passengers going rail, returning R. & O. Navigation Co., or *vice versa*, rate to be one and one-half fare.

(b) European Business.—On presentation of certificate, to be prepared and signed by the Secretary of the Eastern Canadian Passenger Association, and countersigned by the Secretary of the Canadian Committee, or the Secretary of the British Medical Association, one-way tickets to be issued at one-half lowest one-way first-class rail fare; round trip tickets at lowest one-way first-class rail fare between all points in Canada. Rates to the Pacific Coast subject to concurrence of Transcontinental Passenger Association. Steamship lines to advise Secretary what, if any, additional arbitraries are required. Dates of sale, July 1st to September 30th, 1906, inclusive. Final return date, September 30th, 1906.

2. *Extension of Time Limit.*—On deposit with Joint Agent of Standard Convention certificates issued from points in the Maritime Provinces, points west of Port Arthur and from points in the United States, on or before August 28th, 1906, and on payment of fee of \$1.00 at time of deposit, an extension of time until September 30th to be granted. Joint Agency to be conducted in the name of G. H. Webster, Secretary, Eastern Canadian Passenger Association, will be kept open from August 21st to September 15th, 1906.

3. *Side Trips.*—(a) Side trip tickets to be sold from Toronto to delegates from the Maritime Provinces, from points west of Port Arthur and from the United States, on presentation of validated certificate, or deposit receipt, at lowest one-way first-class fare for the round trip, to all points in Canada. Dates of sale, August 23rd to September 1st, 1906, inclusive. Return limit, September 30th, 1906.

(b) Side trip tickets also to be sold to delegates from Ontario and Quebec to stations west of and including Sudbury, and east of and including Montreal, on presentation of validated certificate or deposit receipt, at lowest one-way first-class fare for the round trip. It being understood, also, that the arrangements authorized for the extension of time limit from points in the Maritime Provinces, from points west of Port Arthur and from points in the United States will also apply for delegates from Ontario and Quebec.

Usual additional arbitraries *via* Upper Lake Steamships to apply, viz., going lake returning same, \$8.50 additional to be collected. Going lake, returning rail, or going rail returning lake, \$4.25 additional to be collected. Also usual arbitraries *via* St. Lawrence route, for delegates desiring to return by steamer, on presentation of tickets to purser, viz., \$6.50 Toronto to Montreal; \$3.50 Kingston to Montreal.

Via Northern Navigation Company on lines where meals and berth are not included, the rail rate will apply; on lines where meals and berth are included, rate to be single fare plus meal and berth arbitrary.

Ocean Transportation.—The "Lines" will grant the minimum rates named in the circulars published by the respective lines.

NOTES.

At the meeting of the Toronto Pathological Society on Sat., April 28th, it was decided to change the night of meeting for next year to the last Wednesday of each month. The following officers were elected for the coming term: President, Dr. J. A. Amyot; Vice-President, Dr. W. H. Pepler; Treasurer, Dr. C. J. Wagner; Corresponding Secretary, Dr. E. S. Ryerson; Recording Secretary, Dr. H. S. Hutchison.

Members of the Ontario Medical Association are again reminded of the annual meeting to be held in Toronto, Monday evening, August 20th. As heretofore announced, it will this year be simply an executive session. The following are chairmen of committees for the current year: Dr. C. J. C. Hastings, Toronto, Committee on Credentials; Dr. R. J. Trimble, Queenston, Committee on Public Health; Dr. A. H. Perfect, Toronto Junction, Committee on Legislation; Dr. John Ferguson, Toronto, Committee on Publication; Dr. W. R. Walters, East Toronto, Committee on By-laws; Dr. Bruce L. Riordan, Toronto, Committee on Ethics; Dr. D. J. Gibb Wishart, Toronto, Committee on Papers and Business; Dr. H. J. Hamilton, Toronto, Committee on Arrangements.

Personals.

Dr. Garratt sailed for England at the end of May.

Dr. Greig has moved from 131 to 493 Sherbourne St.

Dr. Wm. Goldie spent three weeks of last month in the Cobalt District.

Dr. Geo. Peters expects to sail for England June 7th, and will be away about six weeks.

Drs. Palmer and Stevenson left Toronto May 23rd for England, and will be away for two months.

Dr. Geo. Porter, who has been spending some time in England and on the Continent, has returned to Toronto.

Dr. Wm. Hackney, Trin. '99, after three years' post-graduate work in London, Eng., has commenced practice in Ottawa.

Dr. S. Douglas has removed from Park River, N.D., to Winnipeg, where he will in the future practice general medicine.

Dr. G. W. Ross, Tor. '02, who has been doing post-graduate work in London for the past three years, is expected home in August.

Dr. P. W. Saunders, Tor. '02, has been appointed House Physician at the Victoria Hospital for Diseases of the Chest, London, Eng.

Dr. Walter Wright, for the past year and a half a house surgeon at the Hospital for Sick Children, Toronto, has been appointed to the interne staff at the General Hospital.

Word has been received in Toronto of the appointment of Dr. Don Armour to the position of senior assistant surgeon in the National Hospital, Queen's Square, London, England. There were a large number of applicants for the position. Dr. Armour is a son of the late Chief Justice Armour.

Dr. Joseph Graham, son of the late Dr. J. E. Graham, was married on May 2nd to Miss Eleanor Boyd, youngest daughter of Sir John Boyd. After a trip of two weeks to the cities of Chicago, St. Louis and New York, Dr. and Mrs. Graham returned to Toronto, and are living at 55 College St.

The following gentlemen have accepted invitations to attend the 57th annual meeting of the American Medical Association at Boston, June 5th to 8th, 1906, as the guests of the Association: Dr. Reeve, Dr. Peters, Dr. Primrose, Toronto; Dr. Mills, Dr. Bell, Dr. Armstrong, Dr. Shepherd, Montreal; Dr. MacLaren, St. John; Dr. Simon W. Tunstal, Vancouver.