Dominion Medical Monthly
And Ontario Medical Journal
Vol. XXXVII. TORONTO, JULY, 1911. No. 1

Original Articles

THE RELATIONSHIP BETWEEN THE DUCTLESS GLANDS AND CARBOHYDRATE METABOLISM.*

By Thomas B. Futcher, M.B., Baltimore, Md.

In accepting the kind invitation of the Chairman of the Medical Section to address this Association, it seemed that it might be profitable to review a field which has been made fertile by the researches of many workers in an effort to throw light on a problem which, as yet, is only partially solved. It occurred to the writer that a review of the subject of carbohydrate metabolism, with especial reference to its bearing on the etiology of diabetes mellitus, would be of interest not only to the physician, surgeon, and obstetrician, but also to the physiologist and pathologist. As the subject is such an enormous one, I have decided to confine myself to a consideration of the influence of the ductless glands on the warehousing of the ingested carbohydrates. Since the scope of such a paper must necessarily be limited, a review of the investigations carried out along these lines must consequently be brief and rather fragmentary.

The glands that I have considered are the pancreas, adrenals, thyroid and pituitary. At this point an explanation is necessary. The pancreas in the ordinary sense is not a ductless gland, but, as we shall see later, it contains innumerable small groups of cells, which are really ductless glands, whose function is entirely different from the ordinary acini of the pancreas, and whose secretion passes directly into the surrounding vessels. Further, it remains to be

*Address in Medicine, Ontario Medical Association, May 30, 1911.

shown whether the pituitary is in a true sense a ductless gland, for, as we shall subsequently see, Cushing has almost conclusively shown that the pituitary secretion is poured directly into the cerebro-spinal fluid rather than into the blood stream.

For a proper appreciation of what happens in true diabetes mellitus or in a temporary glycosuria, a brief statement of our present conception of carbohydrate metabolism in the normal individual is necessary. Although Pavy and others deny Claude Bernard's glycogenic function of the liver, until more convincing evidence is brought forward, we must accept this theory, and still accord to this organ the important duty it is believed to perform in the disposal of the carbohydrates taken in the food and those metabolized from the ingested proteids. According to most physiologists, the carbohydrates eventually reach the liver by way of the portal vein, largely in the form of glucose, or grape sugar, and are there converted by the liver cells into glycogen. The glycogenic function of the muscles is also generally accepted, and it is believed that the whole muscular system contains an amount of this polysaccharia equivalent in weight to that contained in the liver. The muscles therefore constitute a second great reservoir for the storing up of a supply of carbohydrates. When the system demands more fuel to produce energy and heat, the liver reconverts the glycogen back into glucose by the action of a special enzyme produced in the liver cells, and this glucose reaches the systemic circulation by way of the hepatic veins.

In the normal individual it has been shown that at all hours of the day the glucose in the circulating blood ranges within narrow limits, variously stated as being between 0.1 and 0.15 per cent. and 0.1 and 0.2 per cent. Why is it that after a meal rich in carbohydrates this normal glycaemia is still present? It is due to the fact that the surplus of glucose is stored up in the liver and muscles as glycogen and is only slowly reconverted again into glucose and given up to the system as the latter demands it. It has been supposed that the ultimate combustion and disposition of the carbohydrates takes place in the muscles. The actual means by which this is brought about has been the subject of innumerable investigations by physiologists for years. We shall see later whether a satisfactory explanation has been found. Whenever, for any reason, the percentage of glucose in the circulating blood reaches more than 0.2 per cent. we get a condition of hyperglycaemia, and the excess passes over into the urine and produces either a transitory glycosuria, or a permanent glycosuria, as in diabetes mellitus. In marked cases of the latter disease, the percentage of glu-

cose in the circulating blood may reach as high as 0.5 to 0.7 per cent. One can conceive of such a hyperglycaemia occurring chiefly in one or two ways, either as a result of over-production, or, what is much more likely, a deficient combustion of glucose. The problem as to how this hyperglycaemia occurs is the one that has for so long occupied, and still occupies, the attention of those who have made a special study of the etiology of diabetes. We shall endeavor to see whether the study of the functions of the ductless glands has thrown any light upon this puzzling question.

THE ISLANDS OF LANGERHANS AND CARBOHYDRATE METABOLISM.

The first observer to suggest a relationship between the pancreas and carbohydrate metabolism was Thomas Cawley, who, in 1788, found calculi in the pancreatic duct and marked atrophy of the gland in a fatal case of diabetes. This clinical relationship has since been amply confirmed. It remained for Minkowski and von Mering, whose brilliant experiments were published in 1889, to demonstrate in animals that an intact pancreas was absolutely essential to normal carbohydrate metabolism. They showed that complete extirpation of the gland in dogs and other animals was invariably followed by the development of a typical diabetes mellitus with all its characteristic symptoms as seen in man, including a fatal acidosis. If one-tenth of the gland were left intact diabetes did not develop. They were not aware at the time of the true explanation for the occurrence of diabetes in the pancreatectomized animals, nor of the reason why it did not occur if sufficient of the gland were left behind. In 1892 Lépine, of Lyons, was the first to suggest that the pancreas produced an internal secretion containing a "glycolytic ferment," which was necessary for the proper burning up of the glucose in the tissues.

The year 1900 marks a new era in our knowledge of the etiology of diabetes. In that year Opie published from Welch's laboratory a pathological study on interstitial pancreatitis, in which he, for the first time, demonstrated a connection between the islands of Langerhans and diabetes. These groups of cells were first described by Langerhans in 1869, but little or no attention had been paid to them. They were composed of columns of cells, having no communication with the ducts of the gland, but being in intimate relationship with a rich capillary network. They are about the size of a kidney glomerulus, measuring 0.2 mm. in diameter. The islands are situated for the most part in centres of the ordinary gland acini, and are quite distinct, structurally and functionally, from them. They are distributed throughout the whole gland, but are more

numerous in the tail than in the body or head. In tissues treated with Müller's fluid they appear, under low magnification, as conspicuous points of a bright yellow color. With high magnification they are found to be composed of small polygonal cells having a round nucleus and homogeneous protoplasm. These islands, therefore, are really ductless glands imbedded in the substance of the pancreas.

Without going into details, it may be briefly stated that Opie found that in a certain percentage of the cases of interstitial pancreatitis diabetes was an accompaniment of the disease. He showed that the diabetes occurred especially in the interacinar form of pancreatitis, in which the interstitial tissue grows in and surrounds the individual acini, rather than in the interlobular type of the disease. What was of most importance, however, was the observation that diabetes was associated only in those cases where the islands of Langerhans were practically completely destroyed, and this was naturally most likely to occur in the interacinar type. The thought naturally occurred to Opie to make a systematic histological examination of the pancreas in a consecutive series of fatal diabetes cases. He found that in nearly every instance the islands were almost completely destroyed and had undergone a hyaline degeneration. Ssobolew, working independently, published in 1901 practically identical observations on the relationship between disease of the islands and diabetes. In view of the intimate relationship, in his series, between involvement of the islands and diabetes, Opie was led to conclude that there was a very intimate connection between them and carbohydrate metabolism. Laguesse and Schäfer had previously suggested that the islands furnish an internal secretion in the same manner that the thyroid and adrenals do. Owing to their minute size and the impossibility of isolating them from the rest of the gland substance, it has been practically impossible to produce experimental evidence supporting this view, although Ssobolew claims to have done so. Occurring as ductless glands, and being surrounded by a rich capillary network, it is extremely probable that these islands secrete some substance—call it a "glycolytic ferment" after Lépine if we will—which enters the circulating blood, and which is necessary for the proper combustion of carbohydrates in the system.

From what has been said it will be perfectly obvious to everyone that a careful microscopic examination of the pancreas is necessary before excluding it as a cause of diabetes. The gland on macroscopic examination may appear perfectly normal, while on microscopic study these small islands may be found completely degen-

erated, the remainder of the gland structures being perfectly intact. Opie's observations have been confirmed by numerous observers on this continent and abroad, but it must be pointed out that a number of instances have been recorded in which diabetes has occurred without any microscopic changes in the islands having been found. These negative results are subject to two interpretations. One inference is that all cases of diabetes are not actually of pancreatic origin, which is probably true. The other is that, although the islands show no microscopic change, they may be functionally inactive and fail to secrete their specific enzyme, just as we may have a functional inactivity of the oxyntic cells in the gastric mucosa with resultant anacidity of the gastric juice.

Following closely upon these important researches, Otto Cohnheim, in 1903 and 1904, published results of experiments which seem destined to solve the problem of how the glucose of the circulating blood is ultimately burnt up in the body. This is the mystery which has puzzled physiologists for generations. By means of the Buchner press it is possible to compress the juice out of all the cells of any gland or fibre of any tissue. In this way he secured quantities of juice from the pancreas and muscles of cats and dogs. With each of these juices he first experimented separately. Each juice when added alone to a solution of glucose is inactive. When, however, muscle juice and glucose solution were first mixed together, and then the juice of the pancreas added, there was a rapid and complete conversion of the glucose into carbonic acid and alcohol. Cohnheim at first thought that the chemical change that occurred was analogous to Pawlow's researches concerning the relationship between trypsinogen, the proteid enzyme of the pancreas, and proteid digestion in the intestine. Pawlow found that trypsinogen itself was inactive on proteids, but when it came into contact with the " enterokinese " of the intestinal juice it was converted into trypsin, which then caused rapid digestion of the proteids. Cohnheim believes that the ingested carbohydrates are finally burnt up in the muscles. He holds that both the pancreas and the muscles produce substances that are necessary for normal carbohydrate metabolism. He was led at first to the belief that these substances were of the nature of enzymes or ferments. According to this hypothesis, he held that the muscles produced a proenzyme which requires the action of another ferment, produced by the pancreas and contained in its internal secretion, before it can become active on carbohydrates. Later researches convinced Cohnheim that the activating body produced by the pancreas was really not a ferment. It withstood boiling and was soluble in 96 per cent. alcohol, but not

in ether. He consequently concluded that it was closely related in its characteristics to such other well-known secretions as adrenalin, iodothyrin, and secretin. An interesting feature is that an excess of this pancreatic product hinders, and when present in large quantities, absolutely prevents, carbohydrate combustion. Cohnheim suggests two explanations for this remarkable finding. The first is, that the pancreas produces two substances, one of which favors and the other hinders sugar combustion. For various reasons he sets this aside as a possible explanation. The second is based on the observation of Neisser and Wechsberg, that the destruction of bacteria by a bactericidal serum is due to the combined action of amboceptors and complement, and that an excess of amboceptors destroys the bactericidal action of the serum. By analogy, he suggests that by adding an excess of pancreas juice to a mixture of glucose solution and muscle juice, an over-abundance of amboceptors is provided, thus destroying the glycolytic action of the two juices.

Cohnheim's work seems to have pretty well withstood the attacks of various workers up to the present time. The claims of Claus and Embden that the sugar destruction was due to the effect of bacterial contamination seems to have been amply disproved. Rahel-Hirsch has confirmed Cohnheim's research. His observations would seem to show that tissues other than the muscles, for example, the liver, yield a substance which can be rendered active by the pancreas juice and then cause rapid destruction of glucose.

Cohnheim's researches undoubtedly have gone a long way toward solving the problem of the ultimate disposal of the carbohydrates in the normal individual. In combination with Opie's investigations they seem to afford a satisfactory explanation for the occurrence of the hyperglycaemia in diabetes. There seems little doubt but that the activating agent produced in the pancreas is a product of the islands of Langerhans. When these are destroyed, as they are in such a large percentage of diabetic patients, the substance produced by the muscles, and possibly other tissues, is not converted into the form which is necessary for it to be capable of burning up the glucose in the muscular tissues. Consequently, a hyperglycaemia, with more than 0.2 per cent. of glucose in the circulating blood occurs, and a transitory or permanent glycosuria ensues.

Although these investigations have thrown a flood of light on normal carbohydrate metabolism, as we shall later see, the problem is not a simple one, as the other ductless glands have been shown to have a marked influence on the warehousing of the carbohydrates in the system.

THE THYROID AND CARBOHYDRATE METABOLISM.

Every observer who has had a wide experience with diseases of the thyroid gland has been impressed by the fact that in hyperthyroidism and hypothyroidism there is marked disturbance in the carbohydrate metabolism in many of the cases. F. Kraus, Ludwig, Chvostock, and others have observed that spontaneous glycosuria is not uncommon in exophthalmic goitre. Moreover, it has been shown that the administration of small amounts of carbohydrates in this condition often cause an alimentary glycosuria. In other words, in over-activity of the gland the tolerance for carbohydrates is reduced. Glycosuria in animals is not uncommon as a sequel to ether administration. Gray and De Sautelle have shown that when the thyroid is removed the amount of glucose put out in the urine, under the above conditions, is strikingly less, demonstrating that when the restraining influence of the thyroid is thus removed the pancreas is more efficient for carbohydrate metabolism.

On the other hand, in hypothyroidism, myxedema, the occurrence of spontaneous glycosuria is so rare as practically never to occur. Hirschl found that in an outspoken case of myxedema the administration of 200 to 500 grams of grape sugar did not produce alimentary glycosuria. This would seem to show that the tolerance for carbohydrates in this disease is increased 2 to 5 times. Knöpelmacher has confirmed these findings and has shown that the limit of sugar tolerance sinks to the physiological level as improvement takes place under treatment with thyroid.

King has recently conducted some interesting experiments which seem to adequately explain how the thyroid gland influences carbohydrate metabolism. Following the line of Cohnheim's experiments, he added together weighed amounts of crushed muscle, pancreas and dextrose. He then carried out three series of experiments. He first added a weighed quantity of normal thyroid gland and found that there was a decided lessening of the breaking down of dextrose by muscle and pancreatic juice as compared with the control. The same experiment was carried out with boiled thyroid with identically the same action as with the unboiled gland, *i.e.*, a very definite retardation. This showed that the substance is not a ferment, but is thermostabile in that it resists boiling. The next series of experiments was made with the active principle of the gland, the iodothyrin of Baumann, and revealed the fact that the retarding effect on the breaking down of the glucose was even more striking than when the whole gland was used. To use King's words, "These results therefore show that the thyroid gland influences definitely the carbohydrate-destroying mechanism of the body,

and render intelligible the clinical findings in myxedema and exophthalmic goitre. Increased activity of the thyroid we should expect from the above experiments to be associated with a decrease in the power of the carbohydrate-destroying mechanism, and such is clinically shown to be the case by the finding of glycosuria in Graves' disease."

"Decreased activity of the thyroid should, on the other hand, at least not diminish the power of the carbohydrate destructive mechanism of the body, and this view is rendered very probable by the rare occurrence of glycosuria in myxedema, and, in addition, by the extremely high assimilation limit for dextrose in this condition."

From the foregoing it will be seen that we have an example of the retarding action of the active agent of one ductless gland on that of another (it being taken for granted that the active agent of the pancreas is provided by the islands of Langerhans). It will be of interest, in this connection, to discuss at this point the noteworthy work of the members of the Vienna School, Falta, Eppinger and Rudinger, who have devoted especial attention to the study of the inter-relationship of the action of the ductless glands. They have correlated their results and have come to the following conclusions:

(1) The thyroid and pancreas mutually retard the action of one another.

(2) The pancreas and chromaffin system mutually retard the action of one another.

(3) The thyroid and the chromaffin system mutually increase the action of one another.

The Adrenals and Carbohydrate Metabolism.

Although clinical experience has given us little or no evidence from which we could draw the conclusion that the adrenals materially influence carbohydrate metabolism, yet laboratory experiments have adduced ample testimony that they do. In 1901 Blum reported that the subcutaneous injection of an aqueous extract of adrenalin produced glycosuria in 22 out of 25 animals experimented upon. Herter, in the following year, published the results of a series of instructive experiments in which he showed that the subcutaneous, intravenous and intraperitoneal injection of adrenalin chloride solution into dogs was almost invariably followed by glycosuria. He demonstrated that marked glycosuria followed the application of small quantities of adrenalin directly to the pancreas —quantities which when applied locally to other parts of the body either gave rise to no excretion of sugar or to a trivial glycosuria.

Zuelzer has shown that an antagonistic action exists between the adrenal secretion and the so-called internal secretion of the pancreas. He found that when normal blood was allowed to flow through the liver of a dog whose pancreas had been extirpated the sugar in the urine increased from 50 to 70 per cent., but this percentage was decidedly increased when the liver used was from a dog in whom suprarenal diabetes has been previously induced. He thinks that the internal secretions of the pancreas and adrenals react upon each other within the liver in such a way as to maintain the normal sugar elimination. When the pancreatic secretion is wanting, as in pancreatic diabetes, the unhindered adrenalin produces an increase in the sugar. When the function of both the pancreas and the adrenals was destroyed, glycosuria failed to occur. After the pancreas was removed and the suprarenal veins were ligated there was again an absence of diabetes. Zuelzer has experimented upon a very large number of pancreatectomized animals, and, except when the suprarenal veins were also tied off, glycosuria always followed. He is convinced that one of the most important functions of adrenalin is its effect on sugar metabolism in the liver. The adrenal and pancreatic secretions seem to be antagonistic in their action so far as carbohydrate metabolism is concerned.

Lépine, in working on a method of estimating the functional activity of the pancreas, in regard to both its internal and external secretions, has made some interesting observations which have a bearing on this interaction of the internal secretion of the two glands. It has been found that a weak adrenalin solution instilled into the eye of a pancreatectomized animal causes mydriasis. Fifty-five per cent. of the eighteen diabetics into whose eyes Lépine instilled adrenalin showed dilatation of the pupil; whereas, in thirty non-diabetic persons so tested only two showed dilatation of the pupils. The inference from these results is that in over one-half of the diabetics tested there existed, in all probability, some abnormality of the internal secretion of the pancreas, and consequently the effect of the adrenalin in dilating the pupil was not hindered. The test may, therefore, prove of value in helping to determine clinically whether we are dealing with a case of pancreatic diabetes or not. If, on instilling adrenalin solution into the eye, dilatation of the pupil results, we must be strongly suspicious that the islands of Langerhans are largely destroyed or functionally inactive.

The Pituitary Gland and Carbohydrate Metabolism.

One of the most important contributions to our knowledge of carbohydrate metabolism has recently been furnished by the brilliant researches of Cushing and his co-workers, who have shown

that the pituitary secretion has a remarkable influence on carbohydrate tolerance. Until a very recent date the hypophysis was believed to be a functionless structure. Cushing and his assistants, Crowe, Homans and Goetsch, have shown that complete hypophysectomy in animals is invariably fatal. Clinical observations and the knowledge acquired from surgical operations for diseases of the gland in man confirm these laboratory results. A thorough consideration of our knowledge of the influence of the gland on body growth, and the physiological action of pituitary extract, is beyond the scope of this paper. Consequently only those phases which have a more or less direct bearing on the subject under consideration can be dealt with.

A brief account of the anatomy of the gland will be of interest. Following the description of Herring, we speak of three divisions: the anterior lobe or *pars anterior;* the posterior lobe or *pars nervosa;* and the modified cellular structure derived from the anterior lobe, which surrounds the posterior lobe, and extends upwards along the stalk of the infundibulum—the *pars intermedia.* The anterior lobe is derived from the pharyngeal pouch described by Rathke in 1838, and is consequently of ectodermic origin. The gland is situated in the *sella turcica* and when normal is very small, its weight being 0.6 grams. The anterior lobe resembles the thyroid somewhat in structure. It is extremely vascular, the blood supply being derived most probably from branches of the carotids. The cells of the anterior lobe are classified according to their ability to take stains. Some are chromophile (either of the eosinophilic or basophilic variety) and the remainder chromophobe.

"In the *pars intermedia,* investing the posterior lobe, the cells are of a different type, without eosiniphilic granules, and it is here chiefly that one finds a tubular or acinous distribution of cells which have a tendency to secrete colloid, resembling in appearance the secretion characteristic of the thyroid gland. These cells are seen, under certain circumstances, actually to invade the *pars nervosa,* into which the product of their secretion is directly discharged, whence, as Herring first pointed out, it seems to pass through tissue channels towards the infundibular cavity, to find its way ultimately between the ependymal cells into the cerebro-spinal cavity of the third ventricle." (Cushing.)

The *pars nervosa* is composed of neuroglia and ependymal tissue, and serves probably to transmit the secretion of the *pars intermedia* and perhaps of the anterior lobe.

The researches of recent years have shown that pituitary extract possesses very powerful physiological properties. Oliver and

Schafer showed that it caused marked increase in the blood pressure from action both on the peripheral blood vessels and the heart. It is a powerful diuretic. Both these properties are attributable to the posterior lobe. Injections of extract of the anterior lobe cause an increase in temperature. Over-activity of the anterior lobe leads to gigantism if this occurs during the period of an individual's growth, and acromegaly if it occurs only after the usual period of growth is over. Absence or disturbances of the secretion produce the so-called "Froehlich's syndrome," described by this writer in 1901, and to which he gave the name *distrophia adiposa-genitalis*. It is characterized by small stature; amenorrhea, infantile genitalia, hypotrichosis, and an excessive deposition of fat. Cushing and his associates have reproduced experimentally an exact counterpart of this condition in hypophysectomized puppies.

It is only within the last few months that it has been definitely demonstrated that the posterior lobe of the gland has a most powerful regulating influence on carbohydrate tolerance. Although Marie first described acromegaly in 1886, it was not until 1889 that he pointed out its association with pituitary enlargement. Since that date numerous observations have shown that carbohydrate metabolism is materially disturbed in acromegaly. Out of 176 cases of the disease reported in the literature up to 1908, Borchardt found that glycosuria occurred in 35.5 per cent. of the cases. He conceived the idea that this glycosuria might be the result of a perversion of the pituitary secretion. He proceeded to demonstrate this experimentally by injecting extract of hypophysis obtained from men and horses into dogs and rabbits. In dogs, although after large doses of this extract glycosuria sometimes occurred, no uniform result was obtained. In rabbits, however, a glycosuria varying from the slightest trace of sugar to 4.2 per cent. occurred constantly. Two rabbits showed a hyperglycaemia. As a result of his experiments Borchardt was led to conclude that the glycosuria associated with acromegaly was possibly due to over-activity of the hypophysis.

It remained for Cushing and his associates, Goetsch and Jacobson, to solve the problem of the influence of the pituitary secretion on carbohydrate metabolism. They find that it is the posterior lobe that exerts this influence. For a few hours to a few days after removal of the posterior lobe of the pituitary gland they observed that there may be a temporary glycosuria or a lessened tolerance to ingested cane sugar. This is followed later by a great increase in the animal's tolerance to saccharose, so that the animal is capable of warehousing two or three times as much as was found to be its normal tolerance before operation. They are of the opinion that the

normal tolerance of animals and also of the human individual is dependent upon the effect of the pituitary secretion, which eventually reaches the circulatory blood. Cushing has shown that the secretory product of the posterior lobe of the hypophysis enters the cavity of the third ventricle by way of the infundibulum and becomes dissolved in the cerebro-spinal fluid, a medium which passes from the ventricle to the subarachnoid spaces and thence in all probability enters the blood stream by way of the dural spaces. That it is contained in the subarachnoid fluid he has repeatedly shown by causing a glycosuria or a lowered tolerance by injecting the fluid into dogs. The glycosuria or diminished tolerance just after operation is believed to be due to an increased amount of pituitary secretion being forced into the cerebro-spinal fluid by manipulation. The phenomenon is analogous to the increased symptoms which follow thyroidectomy after the operative treatment of exophthalmic goitre.

Cushing comments on the discordant results that different observers have found in the study of carbohydrate tolerance in acromegaly. Some have found, as already stated, an actual glycosuria; others only a diminished tolerance, and still others a decidedly increased tolerance. He is of the opinion that these discrepancies are entirely dependent upon the stage of the disease at which the case comes under observation. He holds that the adenomas or other tumors of the anterior lobe of the pituitary, which cause the characteristic features of acromegaly, also produce hyperplasia and overactivity of the posterior lobe in the early stages (hyperpituitarism), with the result that an excess of the secretion reaches the circulation and a lowered tolerance to carbohydrates ensues. In the later stages a hypoplasia with partial destruction of the posterior lobe and consequent lack of its secretion occurs, with the result that there is an increased tolerance to carbohydrates.

Clinical observation on cases of infantilism (hypopituitarism) in the human individual confirm the correctness of Cushing's theory. Since we know that this remarkable condition is due to absence of the secretion of the pituitary, we would expect the tolerance to carbohydrates to be markedly increased. Feeding tests with glucose prove this to be the case, for the patients can ingest 3 to 5 times the normal amount of glucose without glycosuria resulting. It should be emphasized here that in the experimentally produced infantilism of dogs the carbohydrate tolerance is also markedly increased. The deposition of fat in human infantilism, as well as that experimentally produced in dogs, is directly dependent on this increased tolerance to carbohydrates, and is probably due to lowered powers of oxidation in the tissues, with consequent conversion of the in-

gested carbohydrates into fat, instead of into their customary end products.

Cushing has shown that injection of pituitary extract into dogs causes regularly a glycosuria and the blood shows a hyperglycaemia as proven by quantitative analysis. He suggests the explanation that this hyperglycaemia and glycosuria may be due to the pituitary secretion causing an increased glycogenolysis in the liver. Whether this be the true explanation, or whether it be due to the pituitary secretion having an inhibitory action on the special internal ferment of the pancreas, remains to be demonstrated by further experiments.

It will be readily seen that these researches of Cushing and his pupils have a most important clinical bearing. "As polyuria is apt to be associated with these pituitary lesions, whether experimentally produced or the outcome of disease, a clinical picture readily mistaken for diabetes mellitus or insipidus may be present. It is not improbable, furthermore, that the temporary glycosurias following fractures of the base of the skull are induced by trauma of the posterior lobe or its infundibular attachment—glycosurias in other words which are comparable to and which follow on the operative manipulation of these structures." (Cushing.)

From the foregoing it is obviously apparent that the question of carbohydrate metabolism in health and in diabetes is a complicated one. Every year new light is being thrown on the problem. While positive proof that all cases of diabetes are due to disturbance of the normal function of the pancreas is still lacking, yet it is the conviction of the writer that eventually it will be shown that most, if not all, of the cases are due to absence of the special internal secretion of the pancreas or to interference or retardation of its function by the active principle of some one or other of the various ductless glands. Although, as yet, these researches have given us little assistance in the treatment of diabetes along the lines of organo-therapy, yet the writer is encouraged in the belief that the future holds out the prospect of encouraging results in this direction.

BRAIN TUMOR.

GRAHAM CHAMBERS, M.B., TORONTO; GEO. A. BINGHAM, M.B., TORONTO.

G. H., aged 17 years, admitted to Toronto General Hospital April 3rd, 1911.

Complained of:—

1. Headaches at night, which would disappear by ten the next morning.
2. Vomiting spells.
3. Failing eyesight.
4. Thick phlegm in the throat.
5. Pain in lumbar muscles.
6. A sound in the left ear when lying down, like blowing air across the mouth of a bottle.

The headaches began about January 6th, 1911, persisting up to the time of the operation. Vomiting started in about the same time, and persisted up to operation.

The failure in sight came on gradually about June, 1910, and has grown worse since January.

The sound in the ear dates back to about March 27th, 1911.

Family history negative.

Personal history.—Born in East London, England; sent to Fagan Home; put on farm when twelve years old; enjoyed farming until last place, where the farmer made him work hard, especially at night; would not let him have his eyes attended to; frequently went about with wet feet. Became ill on January 2nd last; confined to bed a couple of weeks. All through last winter had colds; expectorated thick phlegm, but did not sweat at night.

Jan. 2nd.—The patient got what he thought to be an attack of grip, which started with headaches. He complained of fullness in the head. Two days later he began to cough, felt feverish, with a very severe headache; had photophobia accompanied by vomiting, headache and visual disturbances. He felt very drowsy, and if he sat down for a few minutes would fall asleep.

March 15th to 20th.—Still felt drowsy and indifferent.

March 20th.—A rash appeared during the night and lasted four days. He was feverish and thirsty, had a loose cough accompanied

by blood-streaked sputum. On March 28th patient went out of doors, but the snow caused eyes to ache and headache. This illness was diagnosed measles.

March 31st to April 2nd.—Continued poorly. Vomited a half basinful of straw-colored fluid. His headache was relieved by vomiting. Vomited three times while dressing on April 1st. It was very difficult to stoop down to lace his shoes. When dressed he felt drowsy and had severe frontal headache. Felt weak in the legs and felt like falling forward, but not to one side or the other. After a little time was able to walk. Came to Toronto April 2nd, went to bed at 7 p.m., and vomited about a quart of coffee-like watery fluid. The attacks of vomiting came on suddenly with a good deal of retching, but the vomitus was not projected. Felt feverish and had a good deal of frontal headache. Felt better next day, but had slight headache.

Admitted to Toronto General Hospital.

Condition since admission:—

Has had headaches ever since, which came on after lying down, and which became less intense by rising and walking about the ward. These headaches felt as though there was a heavy weight inside trying to shove its way out and situated in the low frontal region and to some extent on both sides. Has not vomited since admission. The pain in the back has persisted ever since the attack of supposed grip. He does not notice it when walking, only when bending down or getting up from a chair. The blowing sound in the left ear has persisted ever since the attack of supposed grip and is more pronounced when he is lying awake at night.

Physical Examination.

On percussion of the head most pain is felt over an area the size of a fifty cent piece to the left of the median line and at the level of a line drawn upward, perpendicular to the zygoma, one inch in front of the external auditory meatus. The percussion note is higher pitched and shorter. Face and head are well formed, and two sides fairly symmetrical.

Nervous system.—Intelligence good; not emotional or irritable. No delusions nor hallucinations. Mental condition has not changed in the last year. Can read for about five minutes, after which time things become so dim that he can no longer read. When in the Home in England, while walking in his sleep, he fell, cutting his forehead. There is no paralysis of any group of muscles. There is rather a coarse fibrillar tremor of the tongue and of the extended fingers. There is no facial tremor when the muscles are tightly

contracted. Co-ordination of arms and legs good. Rhomberg's sign absent. When the patient stoops forward with eyes closed he does not tend to fall.

Cranial nerve reflexes.—First, normal; second, visual acuity poor, color sense good; Wernicke's sign absent; third, fourth and sixth, corneal reflex present, no squint, left eye projects slightly, no ptosis—there is nystagmus in every direction except when walking straight forward—pupils four m.m. round and equal, react to light and convergence, sympathetic reflex present, no diplopia present; fifth, normal, two-thirds of the tongue normal; seventh, no evidence of paralysis; eighth, blowing sound in left ear when lying down, hears watch on both sides, best on the right for air conduction—best on the left for bone conduction; ninth, taste apparently normal, pharyngeal reflex present; tenth, no evidence of paralysis; eleventh, trapesius contracts equally, when patient shrugs shoulders; twelfth, tongue protrudes straight.

Reflexes.—Plantar, flexor response; Achilles, absent; ankle clonus absent; knee jerks slightly exaggerated, but equal; patellar clonus absent; cremasteric present—plus; umbilical and epigastric present and increased; arm reflexes not exaggerated.

Examination of the eyes.—There is enlargement and blurring of the edges of both discs; veins are much enlarged and feel congested.

Fields of visions.—Left side of both fields obliterated; left eye has improved since admission.

Sensory.—Sensations for touch, heat, cold and pain are normal.

Nose and throat.—Normal.

The absence of basal symptoms except for involvement of the eighth suggests the sight of lesion as the left occipital lobe above tentorium. X-ray shows a shadow about two by one inch in the posterior half of the cerebrum. It cannot be seen in antero-posterior view.

White blood count, 11,000.

Wassermann and tuberculin, negative.

May 2nd.—Patient complained last night of terrible headache, just as though head were bursting open. This was localized to the left occipital area. Marked tenderness was present on percussion over this area. Morphia did not relieve the pain. Inhalations of amyl nitrite gave relief.

May 2nd.—Operation.—Dr. Bingham raised a flap from the scalp over the left occipital lobe. A plate of bone about two inches by an inch and a half was removed. The dura presented with some bulging. There was no pulsation visible. Dura mater re-

flected, whereupon the brain protruded very markedly. There was great tension present. Two probes were passed inward and forward, whereupon a few ounces of straw-colored fluid escaped. The opening in the brain was enlarged sufficiently to admit of the entrance of the little finger of the operator. A large cavity was thus revealed, the walls of which showed signs of disintegration. A blunt probe passed in to the bottom of the cavity showed a depth of about four inches. After the escape of the fluid, pulsation was noticeable in the substance of the brain, a drainage tube was introduced and passed out through a stab wound in the scalp flap. Scalp wound was closed by interrupted silkworm gut sutures. Moist bichloride dressings applied, and patient returned to the ward.

May 3rd.—Patient conscious and complaining of slight pain and tenderness in the site of the wound. Rested fairly well through the night. Vision appears to be somewhat improved. Only a slight reactionary temperature present. Pulse, normal, and of good quality.

MEDICAL THOUGHTS, FADS, FACTS AND FOIBLES.

By James S. Sprague, M.D., Perth, Ont.

As a Canadian by birth I have been for many years anxious to see the advent of a journal medical that would reach, and be read by, every fellow-practitioner, and to which the humblest and ablest men, as contributors, would be welcome, and in which would appear also notices of the world's progressive movements in medicine and such considerations as regard our professional interests and ethics in this our great Dominion, especially in these, our times, when fakerism, cults falsely named medical, and others, falsely termed Christian, are clamoring for legislative decrees and existence, and for rights to place mud gods—made by and with foul and dirty hands—in our very temples of learning, to the disgrace of civilization, to our well-established integrity and piety, and dishonor of the learned professions—more especially to medicine. To be hated and ridiculed their names need but be mentioned to thinking men; yet one has only to look over recent parliamentary enactments for proofs that we have a Legislature whose consideration and knowledge of delusive cults are not in keeping with their position as safe and wise guardians of the most vital interests of the State—and those interests principally relate to the public health and to the maintenance and protection of its universities, State or endowed; in fact, to all colleges or institutions honorably connected with them. Any qualified and lawfully licensed M.D. in this our country can become an oculist, ophthalmologist, optometrist, optician or retinoscopist, as his degree entitles him to such right.

The advent of a national journal is well known, but as its origin is due to interests associated with those of our Canadian Medical Association—to which each one of us gives our full praise—yet, to which every one of us should, but does not or ever will, give loyal support, and that its articles, however praiseworthy and bearing the evidence as fresh from the ink horns of professors, one fact is this: what we want, yes, sorely need, is a journal that reaches every M.D. in our Dominion, and to which the doctor from Plum Hollow and those from our great medical centres, lesser cities, towns and villages could, and should, contribute freely to its pages, and be not fearful that *McGill* and *Toronto* are in full control of medical journalism, for there are

other schools and other great universities to be born in our great Western Provinces, to which those named will bear, before the close of this century, such relationship that will be considered as secondary; where exist and will be born those the equals in gifts of Lord Strathcona—thus the necessity of a free table at which all may sup and discuss all interests purely medical—and in so doing our country's welfare, one license, one faith, and worship at one altar.

Our own well-established journals, more or less provincial, will exist, but many from necessity, as is the order and tendency of many United States journals, supported by drug concerns not ethical or ethpharmacal, will amalgamate with other journals, or for professional welfare, suspend publication—for our house-cleaning had better be done by *ourselves* and in a reasonable time, as patent medicines, and some we use, were publicly exposed by *Collier;* and medical colleges—so termed—were, when worthy, criticized—but Flexner's report tells the story—write to 576 Fifth Avenue, New York, and for one piece of silver equalling two dimes, learn, too, that *osteopathy* in the "Report" has, in some States, been associated with State Boards of Health—an amalgamation being sought after in *this* Province, but opposed by few journals that guard well our gates—and no alarm sounded by our new national journals or promised discussion at our meetings of the Ontario or Canadian Medical Associations.

The defeat of the " Optometry Bill " by our legislature presents evidence that in the Hon. Mr. Lucas we, and all patriotic men, have a champion—an opponent of close corporations—and his services have been deservedly named in one of our journals, yet, we notice not the objections of this our champion to the recent passage of legislative acts whereby a certain college secured incorporation, charter and powers to grant *B. Oph., D. OPH.,* and "higher degrees" of licentiate and fellow.

It may be stated that there is no great demand by our people or by our profession for such colleges, as our medical colleges have taught, can teach, or could teach, if not, should teach, all subjects named in the calendar of said college; and members of our profession are, by right, entitled to engage in any specialty embraced in the many divisions or subdivisions named in calendar—if in practice, they are termed oculists, and are skilled in all that ophthalmology and optometry (refraction) teach, and have considerable understanding of the optician's work. If the M. D. has had several years in active practice, he, and he alone, is the safest oculist, provided he has selected, in association with general practice, such specialty, not for the money in it, but for his admiration and

adaptability for such work, and in which he will ever hold our profession's respect and not drift towards commercialism—the tendency of cults not recognized as purely professional, whose teachings are antagonistic to medicine, to our civilization, and all honest interests for the public health, of which we are too often the unpaid and maligned guardians.

SUMMARY:

With most encouraging promises of Dominion Medical Registration being realized, and at an early date, the necessity of a Medical Journal, in whose pages all universities would have equal and honorable mention, and all licentiates become subscribers—is apparent to all well-wishers of our profession, who also desire medical journalism shorn of unworthy advertisements, so noticeable in our own, and especially in American journals, of which we have more subscribers and more contributors than to our own journals. Yes, we want, in addition to our Provincial journals—one DOMINION MEDICAL JOURNAL, whose subscription is within reach of every Canadian M.D.

As the publication of one's views medical in the public press has never, and probably will never, add any honor to medicine or to self, it were better that our JOURNAL have it, but if the public and not self-interest warrant a re-publication, such the daily press should have. Would it not have been deserving of our work had we given to the public press some of the views of journals concerning optometry, ophthalmology, osteopathy, Emmanuel movements, the "science" that is not science, "Christian" yet not Christian, etc. Our profession demands that each of its honorable disciples shall, in a public and professional sense, become its brother's keeper; if so, we are to teach our legislators and public that cults—so-called, and as baseless as dreams—given birth in States—

"Where the corn is full of kernels,
And the Colonels are full of corn,"

can not thrive, or be tolerated, in this our country, where the profession of medicine cherishes its history and its high ideals, and those of the British Isles,—hence our title, or degree, of *Doctor*, honorably acquired, and the profession it usually names—are worth preserving, unless socialism is rampant.

You and I brother, know too well that there are those who neither understand things of themselves nor when we explain them

—and to them—and we are meeting daily with those of whom the Arab proverb says:—

"The man who knows not that he knows not aught—
He is a fool; no light shall ever reach him.
Who knows he knows not, and would fain be taught—
He is but simple; take thou him and teach him.
"But whoso knowing, knows not that he knows—
He is asleep; go thou to him and wake him.
The truly wise both knows, and knows he knows—
Cleave thou to him, and nevermore forsake him."

Thus, we, whose profession is learning, and how to live, and instructing us to teach that others may teach and learn, how we may live and others, may or should live—have learned, and are learning, the lesson of service, and that service is the *public health,* and "to the physician more than the priest or minister, in this age, the mind-weary and mind-distressed appeals,"—if such is the truth, why not we protect our profession, since this age is that "of reason in religion and in medicine"?

"Let us have an end of this creation of osteopathists, optometrists, etc., etc. Legislators owe it to their constituents to protect them from this farce," says *Canada Lancet,* and endorsed by every M.D. in this or any country—provided he has respect for his profession, and our universities.

"With malice towards none, with charity towards all, with firmness in the right—and we sustained by steadfastness of purpose—let us strive to finish the work we are in," said the immortal Lincoln.

THE HOUSE OF COMMONS OF CANADA—BILL 15.

AN ACT TO AMEND THE CANADA MEDICAL ACT.

(Reprinted as amended and reported by the Select Committee to which it was referred.)

His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:

1. Paragraphs (*c*) and (*d*) of section 2 of The Canada Medical Act, chapter 137 of the Revised Statutes, 1906, are repealed and the following are substituted therefor:

"(*c*) 'University' shall mean any university which has a teaching medical department in connection therewith, and has the power to grant medical degrees;

"(*d*) 'Medical school' includes any institution recognized by a provincial medical council wherein medicine is taught."

2. Paragraphs (*c*) and (*e*) of section 5 of the said Act are repealed and the following is enacted as paragraph (*c*) of the said section:

"(*c*) The determination and fixing of the qualification and conditions necessary for registration, the examinations to be undergone with respect to professional subjects only, and generally the requisites for registration: Provided that the council shall not determine or fix any qualifications or conditions to be complied with as preliminary to or necessary for matriculation in the study of medicine and for the obtainment of the provincial licenses, these being regulated as heretofore by the provincial authorities."

3. Subsections 1 and 3 of section 7 are repealed and the following are substituted therefor:

"7. The Council shall be composed of:

"(*a*) Three members who shall be appointed by the Governor in Council, each of whom shall reside in a different province; but until such time as the Provinces of Saskatchewan, Alberta and British Columbia shall have been entitled to university representation, two of the three members so appointed shall be chosen from two of these provinces;

"(*b*) Two members representing each province, who shall be elected under regulations to be made in that behalf by the provincial medical council;

"(*c*) One member from each university or incorporated medical college or school in Canada having an arrangement with a university for the conferring of degrees on its graduates, engaged in the active teaching of medicine, who shall be elected by the university or by such college or school under such regulations as may govern in that behalf;

"(*d*) Three members who shall be elected by the homeopathic practitioners in Canada, each of whom shall reside in a different province."

4. Subsections 1, 2, 3 and 4 of section 8 of the said Act are repealed and the following are enacted as subsections 1 and 2 of the said section:

"8. The term of office for members shall be four years.

"2. Any member may at any time tender his resignation by written notice thereof to the president or to the secretary of the council, and, upon the acceptance of such resignation by the council the council shall forthwith give notice in writing thereof, in case of an appointed member, to the Secretary of State of Canada, and in case of an elected member, to the secretary of the medical council for the province, or to the university, incorporated medical school or college, or if a representative of the homeopathic practitioners resigns, to the remaining homeopathic representatives upon the council.

5. Sub-section 2 of section 10 of the said Act is amended by striking out the word "twenty-one" in the second line of the said sub-section and substituting therefor the word "eleven."

6. Paragraph (*b*) of sub-section 1 of section 11 of the said Act is repealed and the following is substituted therefor:

"(*b*) The summoning and holding of the meetings of the council, the times and places where such meetings are to be held, and the conduct of business thereat."

7. Paragraphs (*g*) and (*h*) of the said sub-section 1 of section 11 are repealed and the following are substituted therefor:

"(*g*) The establishment, maintenance and effective conduct of examinations with respect to professional subjects only, for ascertaining whether candidates possess the qualifications required; the number, times and modes of such examinations; the appointment of examiners; and generally all matters incident to such examinations, or necessary or expedient to effect the objects thereof;

"(*h*) The admission to examination of holders of diplomas obtained outside of Canada from a medical school recgnized by the council."

8. Paragraph (*a*) of section 12 of the said Act is repealed and the following is substituted therefor:

"(*a*) No candidate shall be eligible for any examination prescribed by the council unless he is the holder of a provincial license, or unless he presents a certificate from the registrar of his own provincial medical council that he holds a medical degree accepted and approved of by the medical council of the said province."

9. Section 14 of the said Act is repealed and the following is substituted therefor:

"14. The Council shall make such regulations as shall secure to homeopathic practitioners, and to all applicants for registration who desire to be practitioners of the homeopathic school, rights and privileges in respect of registration by the council not less than those now possessed by them under the laws of any province, and under the regulations of the provincial medical council thereof."

10. Section 16 of the said Act is repealed and the following is substituted therefor:

"16. The subjects of examination and the eligibility of candidates shall be decided by the council, and candidates for examination may select to be examined in the English or French language. A majority of the committee conducting the examination of any candidate shall speak the language in which the candidate elects to be examined;

"2. Examinations may be held only at those centres at which there is a university or college actively engaged in the teaching of medicine or having hospital facilities of not less than one hundred beds."

11. Sub-sections 2 and 3 of section 18 of the said Act are repealed and the following is enacted as sub-section 2 of the said section:

"2. Any person who has received a license or certificate of registration in any province previous to the date when the council has been first duly constituted under this Act, and who has been engaged in the active practice of medicine in any one or more provinces of Canada, shall, after ten years from the date of such license or certificate, be entitled to be registered under this act as a medical practitioner, without examination, upon payment of the fees and upon compliance with the other conditions and regulations for such cases prescribed by the council: Provided that if the medical council of any province is not satisfied with the period of years prescribed by this sub-section, such medical council may, as a condition to provincial registration, exact an examination in final subjects from practitioners registered under this sub-section, and the said examination shall be held according to the provisions of the by-laws or rules of the respective provincial councils."

12. The said Act is amended by adding thereto the following section:

"24. No amendment to this Act may be proposed on behalf of the council unless previously accepted by the provincial medical councils."

13. This Act shall not come into force until the legislatures of all the provinces have enacted legislation accepting its provisions: Provided, however, that the medical board of any province may at any time order the withdrawal of the representation of the said province upon the council, by a resolution passed at a general or special meeting of the said board called for the purpose and carried by the votes of two-thirds of the members present at the said meeting, and notice of which resolution has been inserted for three months previously in *The Canada Gazette;* and in case of such resolution being passed the provisions of this Act shall immediately cease to apply to the said province and no more persons shall be given the right to practise medicine within the jurisdiction of the said legislature by reason of their qualification or registration under this Act.

DYSMENORRHEA.

Drenkhahn (*Zentralblatt für Gyn.*) has employed 1 m. atropine dissolved in 1 c.c. of water, injected into the cervical canal in quite a number of cases of dysmenorrhea, arresting at once the spasms of the uterus or preventing their development. The same effect may be got by applying a small cotton wad with a one per cent. solution of atropine against the posterior wall of the vagina. He adds, this simple application may cure a tendency to dysmenorrhea if there are no morbid changes in any of the genital organs.

LOBAR PNEUMONIA.

Matheson (*B. M. J.*) reports the treatment of twenty cases with a combination of creosote and potassium iodide. There were no deaths and four cases aborted. As soon as the diagnosis is established, he gives the following prescription: Potassium iodide, one drachm; creosote, one-half drachm; rectified spirit, two drachms; liquid extract of liquorice, three drachms; water to six ounces. A tablespoonful to be taken every four hours.

Obstetrics

CHAS. J. C. O. HASTINGS, ARTHUR C. HENDRICK.

The Question of the Narrow Pelvis. BY SIR J. HALLIDAY CROOM, M.D. (EDIN.), *Birmingham Medical Review.*

The paper is a review of the modern treatment of labor in a narrow pelvis.

The most usually recognized treatment of narrow pelvis at the present time is, except in some hospitals, the application of *high* forceps or version, or induction of premature labor.

Owing to antisepsis the danger of high forceps delivery is not now so great, but still it is questionable if a patient ever fully recovers from such treatment, however skilfully done.

The first essential in the treatment of narrow pelvis is a correct diagnosis, made early. This is obtained by pelvimetry and abdominal palpation.

Whenever the true conjugate is two to three inches delivery per *vias naturalis* of a living child is impossible and Cæsarean section is the only treatment. In less contracted pelvis, where spontaneous delivery may occur, *i.e.*, in conjugate area $3\frac{1}{2}$ to $3\frac{3}{4}$ in. Here forceps, or turning or premature labor has been advocated, but Sir Halliday Croom states quite truly that over 80% of such labors will terminate without any interference whatever. Therefore they should be left to nature. The fœtal mortality is also low, .2%. Hence the number of such cases requiring artificial aid is small.

What are the limits of pelvic contraction that admit of spontaneous delivery in narrow pelvis? In degrees of contraction slightly under $3\frac{1}{2}$ in. for *flat*, and $3\frac{3}{4}$ in. for generally contracted pelvis, spontaneous delivery may be readily looked for. Hence our duty in such cases is to trust to nature, and aid her by the Walcher position. This is maintained by placing the patient across the bed, with the side of the bed raised on blocks, and letting the legs hang over the edge.

As regards the intermediate position, *i.e.*, between Cæsarean section and spontaneous delivery: Here we have induction of premature labor, forceps operations for enlarging the pelvis.

Premature labor is safe for the mother, but gives 30% mortality for the child. Symphyseotomy is dangerous also for the child. So Cæsarean section is safer. The cutting operation is only to be thought of in high forceps above the brim.

All these cutting operations are matters of option—when the head is unengaged at the brim. Hence, in conclusion, one has:

1. Cæsarean section for greatly contracted *pelvis vera conjugatæ* 2—3 in.

2. Spontaneous delivery for true conjugate of about 3½ in. aided by the Walcher posture.

3. Premature labor, high forceps, symphyseotomy, pubiotomy, or Cæsarean section for the intermediate condition.

A. C. H.

URETHRAL STRICTURE.

Goldenberg (*Zent. für Chir.*), under considerable pressure, injects 20 c.c. of glycerine in impermeable urethral stricture, which then permits the catheter to find its way through.

RODENT ULCER.

Churchward (*The Lancet*) says that calciophosphate of uranium possesses great radioactivity and may be substituted for radium bromide in the treatment of rodent ulcer. He covers the ulcer with a piece of lint, over this the mineral is placed, where it is allowed to remain for three hours each day. It is inexpensive and simple.

TUBERCULOSIS.

Spengler (*Mün. Med. Woch.*) claims to have cured fifteen patients of tuberculosis by artificial induced pneumothorax. By this collapse therapy it is considered that with careful selection of cases excellent results may be obtained.

INFANTILE DIARRHEA.

Stark (*Practitioner*) says that for diarrhea and sickness of young children salicylate of sodium is almost a specific. He gives two grains to a child of nine months, repeated every 2 to 4 hours according to the severity of the disease. It is made palatable with saccharine and chloroform water. Vomiting ceases early, stools become less offensive and less abundant, and there is no after-constipation.

Ophthalmology

D. N. MACLENNAN, W. H. LOWRY.

The Antagonism of Eserine and Atropine. *Ophthalmoscope,* April, 1911.

Stanculeanu and Rasvan, of Bucharest, have experimented to ascertain the facts of the antagonism of eserine and atropine. Eleven persons received two drops of 1 per cent. atropine solution. In 6 to 10 minutes the pupil began to dilate and the maximum was reached in 15 to 20 minutes. The pupil contracted to normal in 7 to 14 days. Half per cent. solution of atropine was placed in the eyes of seven persons. Dilatation began in 6 to 10 minutes. Complete mydriasis was attained in 15 to 25 minutes. Six to nine days elapsed before the effect went off. One-fifth per cent. solution acted just as quickly, but the pupils became normal again in from 60 to 184 hours. A drop of oily solution of eserine reduced this time to from 60 to 120 hours. These observers found out that the antagonism was very little, and they concluded that eserine only controlled atropine for a very short time, and that the atropine soon regained the mastery. Similar experiments with homatropine showed that the eserine reduced the period of action of homatropine from 36 to 60 hours to 20 to 50 hours. W. H. L.

The Non-Surgical Treatment of Cataract. *Ophthalmoscope,* April, 1911.

Louis D'Or, of Lyons, has become a firm supporter of the method of treating incipient cataracts by means of locally applied drugs. His investigations have been based upon the theory, that a hydrating ferment is obtained in the aqueous humor from the blood, and this ferment determines the hydration of the albumens of the lens.

He uses in an eye-bath the following solution:—

Desiccated sodium iodide	5 grms.
Crystallised calcium chloride	5 grms
Distilled water	400 grms.

The uncovered cornea is exposed to this solution, which is warmed, for half an hour each day. D'Or says that with this solution one can check the progress of at least eight cataracts out of ten, can cure one, and can expect failure in the tenth. W. H. L.

Reviews

A Text-Book of General Bacteriology. By DR. E. O. JORDAN, Professor of Bacteriology in the University of Chicago and in Rush Medical College. Published by W. B. Saunders Company, Philadelphia and London.

The author in the second edition of this book has added several new sections which brings it well up-to-date. A general introduction to the various branches of bacteriology is presented, followed by the study of the various pathogenic bacteria in detail. The chapters on immunity, the pathogenic anaërobes and the pathogenic spirilla are well written. The important bibliographical references are given in the text bearing on the various subjects under discussion. The book is well illustrated by drawings and photographs. To students of bacteriology, especially those in medicine, this work should prove extremely valuable. O. R. M.

The Wassermann Sero-Diagnosis of Syphilis in Its Application to Psychiatry. By DR. FELIX PLANT. Authorized translation by Jelliffe and Casamajor. (Nervous and Mental Disease Monograph Series, New York, 1911. $2.00. Pp. 188.)

This book is another welcome addition to a valuable monograph series. Dr. Plant is without rival as the leading authority in the world on the subject of sero-diagnosis in psychiatry, and he has put his best work into this book. He gives first a historical account of the matter, a comparison of the different methods in practice, and a careful study of the technique of the reaction. The rest of the book is taken up with a description of clinical investigations, a summary of the diagnostic value of the reaction, with a chapter on the influence of mercury treatment. The book can be warmly recommended as an authoritative exposition of our present knowledge on the subject. The translators are to be congratulated both on their selection and the excellent way in which they have performed their task. E. J.

La Psychologie de l'Enfant. By PROF ED. CLAPEREDE. 4th edition. (Kündig, Geneva, 1911. Pp. 471.)

In this edition the author has greatly expanded and largely rewritten his well-known volume on child psychology. It stands as

quite one of the best on this subject. The problems are carefully discussed from a scientific aspect, and expounded in a specially lucid style. For to those who wish to acquaint themselves with this important branch of psychology and education no better book could be recommended. E. J.

THERAPEUTIC NOTES

VARICOCELE.

Nilson (*Zeut. für Chirg.-Leipsic*) gives his technic as follows, having operated in sixty-five cases: "The stumps of the vein are drawn such a distance apart that there can be no question of regeneration of the blood canal later, while the testicle is safely suspended from the internal abdominal muscle. The long, lower stump of the vein is drawn through behind the lower fibres of the common aponeurosis of the internal and transverse oblique muscles which are separated from the front of the rectus without disturbing the lay of the fibres or cutting them. The operation requires fifteen minutes to complete and is done under local anesthesia.

TIC-DOULOUREUX.

T. H. Weisenburg (*Ther. Gazette*) has had unfailing success with deep alcohol injections in the treatment of tic-douloureux. He employs Patrick's method of injection. A solution of 85 per cent. alcohol is used with 4 grains of cocaine to the ounce. He injects 2cc. In subsequent injections 90 per cent. alcohol is used.

COLDS.

The following ointment for colds of the throat, nose or chest, applied warm with warmed hands, rubbing well in over the bridge of the nose, throat or chest, is recommended by the Medical Council: —Mutton suet, lard, aa 1 teacup; gum camphor, ¼ to ½ ounce; spirits turpentine, ammonia water, mild, aa 3 tablespoonfuls; oil nutmeg, tablespoonful. The tallow and lard are put on stove until hot; gum camphor is then added. When dissolved take from stove and let cool a little, then add the rest of the ingredients and beat until cold. Keep in jars.

Dominion Medical Monthly

And Ontario Medical Journal

EDITED BY

Medicine: Graham Chambers, R. J. Dwyer, Goldwin Howland, Geo. W. Ross, Wm. D. Young.
Surgery: Walter McKeown, Herbert A Bruce, W. J. O. Malloch, Wallace A. Scott, George Ewart Wilson.
Obstetrics: Chas. J. C. O. Hastings, Arthur C. Hendrick.
Pathology and Public Health: John A. Amyot, O. R. Mabee, Geo. Nasmyth.
Psychiatry: Ernest Jones, W. C. Herriman.
Ophthalmology: D. N. Maclennan, W. H. Lowry.
Rhinology, Laryngology and Otology: Geoffrey Boyd, Gilbert Royce.
Gynecology: F. W. Marlow, W. B Hendry.
Genito-Urinary Surgery: T. B. Richardson, W. Warner Jones.
Anesthetics: Samuel Johnston.

GEORGE ELLIOTT, MANAGING EDITOR.

Published on the 20th of each month for the succeeding month. Address all Communications and make all Cheques, Post Office Orders and Postal Notes payable to the Publisher, GEORGE ELLIOTT, 203 Beverley Street, Toronto, Canada.

VOL. XXXVII. TORONTO, JULY, 1911. No. 1

COMMENT FROM MONTH TO MONTH.

The Ontario Government, perhaps, better, the Provincial Secretary, is to be congratulated upon the recent promotions in the Hospital for the Insane service. We have seen the last, let us hope, of the doctors in politics, pitched into the offices of superintendents of our institutions which have for their aim in life the care and welfare of the insane. We have never had any quarrel with the doctor in politics. What we have for years objected to was the appointment of the doctor in politics to the head of these institutions over well-tried, trained assistants. The evil was abominable and derogatory to the service; it was nauseous to the medical profession; it was, worst of all, harmful to psychiatry. The interests of the inmates always seemed the last desideratum. It has been a long time a-coming; it has come. May it stay forever.

The Meeting of the Ontario Medical Association at Niagara Falls was one of the best in its history. The attendance reached almost the three hundred mark, the addresses were of first order, the papers numerous but mostly good, the entertainments delightful and a general feeling of goodfellowship pervaded the entire convention.

The president proved a very popular one at the helm. A capi-

tal presiding officer, he was always urbane, business-like, with a keen edge on his authority. The secretary had his work well in hand and makes a first-rate man for the position.

Holding a meeting at Niagara Falls was a new idea, and many feared for the success of the meeting. That is to be feared no longer—the meeting-place is an ideal one. It should be used as such oftener.

In these pages we have often advocated meetings of our association at such points, and now that a commencement has been made we may look forward to meeting there again or at the Royal Muskoka, where at hand will be the Sanataria at Gravenhurst to visit, inspect—and hold clinics. We will venture to throw out the suggestion now that the meeting of 1913 be held in that locality.

There is an advantage in meetings in such places other than the holiday outing. It gives the association a chance to confer the honor of the presidency upon outside men, and so not all the time conferring that honor upon men from the larger places. The opportunity of meeting, too, almost exclusively in a summer resort, where the entire establishment is at the disposal of the association, is one not to be lost sight of.

That there are too many papers presented at our association meetings must be a fact quite patent to all. Fewer papers, better selected by the Programme Committee, would allow of more time for reading a good paper right through, broader and better discussions and generally better work. Then, too, there would be less crowding and more time for the transactions of the general business affairs of the association than at present. It always seems as though there was not just enough time for general business.

Dr. Herbert A. Bruce was the choice for president for the coming year. His wide popularity will ensure a record-breaker for 1912.

The Ophthalmo-Diaphanoscope is an instrument recently devised and improved by Dr. Carl Hertzell, of Berlin, to supplement ophthalmoscopic examination. The principle is to illuminate the eye by means of a powerful light of eighty candle power, held in the back of the oral cavity. To prevent burning by the intense heat from the light, the light bulb is enclosed in another glass bulb, and the intervening chamber is filled with water, which is kept running continuously through the chamber by an ingenious contrivance. An opaque mask is worn over the patient's face, leaving openings over the pupils of each eye. The view one gets is alto-

gether different from that one gets with the ophthalmoscope, for it shows the transparency of the coats of the eye and the media, and will thus reveal detachments of retina, retinal and choroidal exudates, sarcomata, foreign bodies, etc. One can see the outlines of the optic disc, the optic nerve, and pigment about the disc. He can look from one eye to the other instantly, and can thus compare the two. In this way an optic neuritis was recognized. By means of an appliance the same light can be made use of as a transilluminator. Nor are its uses limited to the examination of the eye, for the instrument has been used to illuminate the antra, the sinuses, in gynecological work and cystoscopy. W. H. L.

To Dr. H. G. McKid, Calgary, Alta., we offer our hearty congratulations at being elected to the high honor of President of the Canadian Medical Association.

News Items

OTTAWA has had thirty-four cases of smallpox with one death.

DRS. CHARLES and BREFNEY O'REILLY, Toronto, sail for England in July.

DR. J. C. MITCHELL becomes Superintendent of the Brockville Hospital for the Insane.

MCGILL is to receive an additional $100,000 from Lord Strathcona for its new medical building.

HIS EXCELLENCY EARL GREY laid the corner stone of the new Montreal General Hospital early in June.

DR. J. T. FOTHERINGHAM, Toronto, is the Medical Officer with the Canadian Coronation Contingent.

THE new medical buildings of McGill University, Montreal, were opened by His Excellency, the Governor-General on the 5th of June.

DR. WILFRID GRENFELL, the Labrador missionary and explorer, has received the degree of Doctor of Laws from the University of Toronto.

THE McGill medical re-union, held in Montreal the second week in June, proved a pronounced success, 520 being present at the banquet.

DR. ROGER DOYEN, son of Prof. Doyen, Paris, France, is in Montreal establishing a dispensary for the treatment of cases of tuberculosis.

DR. T. B. RICHARDSON, Toronto, has been placed in command of No. X Field Ambulance, Lt.-Colonel Fred Fenton, M.D., having resigned.

DR. GEO. E ARMSTRONG, Montreal, has been appointed Chief Surgeon at the Royal Victoria Hospital, in succession to the late Dr. James Bell.

DRS. R. A. REEVE and A. B. McCallum, Toronto, and Dr. John Stewart, Halifax, have received the degree of Doctor of Laws from McGill University.

MEDICAL practice for sale in country near London, Collections $2,200 annually. House and stable. Price, $1,500. $500 cash. Apply this office.

DR. A. HOWARD PINE, from St. Bartholomew's Hospital, London, England, has been appointed X-Ray Medical Specialist at the Royal Victoria Hospital, Montreal.

DR. J. M. FORSTER, formerly of Mimico, London and Brockville Hospitals for the Insane, has been appointed Superintendent of the Toronto Hospital for the Insane.

THE Toronto Board of Health has issued its first regular monthly bulletin. It is full of good information for the general public, and arrangements should be made with the public press to reprint in full as issued.

THE Ontario Medical Association will ask the Canadian Medical Association to so amend the By-laws of the national organization to provide for admission into the latter only through a local or provincial association.

KINGSTON Medical Association urges the Minister of Education to appoint qualified medical men and experienced teachers to give instruction in Normal and Model Schools on the physical and mental examination of school children.

MONTREAL General Hospital house staff for ensuing year will be: Drs. Ower, Robinson, W. G. Hepburn, H. H. Hepburn, O'Callaghan, McNaughton, McGibbon, Falconer, Moore, Copeland, Standbury, Bauld, Clouston, Shannon, A. D. Campbell and Furness.

OFFICERS of Ontario Medical Association: President, H. A. Bruce, Toronto; Vice-Presidents, Drs. F. W. E. Wilson, Niagara Falls; Wm. Hall, Brampton; F. P. Drake, London; George H. Field, Cobourg; Treasurer, Dr. J. H. Mullin, Hamilton; General Secretary, Dr. F. A. Clarkson, Toronto.

DR. CASEY A. WOOD, Chicago, has presented to the McGill Medical Library a magnificent collection of rare works on diseases

and surgery of the eye. Dr. Gordon Byers, Montreal, has added 2,500 valuable reprints on ophthalmology, whilst Dr. Osler and Sir Lauder Brunton have recently donated some choice engravings for the new home of the library.

DR. BARKER, Baltimore; Dr. Councilman, Harvard University; Hon. Dr. Young, British Columbia; Dr. E. P. Lachapelle, Montreal; Dr. John Warren, Harvard University, and Dr. A. L. Smith, Dean of the Faculty of Medicine, University of Pennsylvania, received the degree of Doctor of Laws recently from McGill University.

THE attention of our readers is directed to the advertisement of Dr. McBride, St. Catharines. Dr. McBride has had a long and successful experience in the treatment of the liquor habit, has a well equipped and comfortable institution in St. Catharines, and will be pleased to send terms and literature to any one upon application. His address is 6 Yate Street.

THERE is to be established in Toronto in the immediate future a fine new private hospital to be known as the Wellesley Private Hospital. It is to accommodate from sixty to one hundred patients, and Dr. J. N. Elliott Brown is said to have received the appointment of Superintendent. An operating theatre of the most modern character will be a feature of the institution.

AT the annual dinner of the Ontario Medical Association, held in the Clifton Hotel, Niagara Falls, Ont., on the evening of the 31st of May, Dr. Casgrain presided, and Dr. Wilson, Niagara Falls, was toastmaster. Dr. J. B. Coleridge, Ingersoll, although brought into the breach at the last moment, made a splendid speech in reply to the toast of Canada. Drs. Roswell Park, Buffalo, and Dr. Woodruff, Chicago, responded for the American profession, the former reading an epitome of a nencyclopedic article on the early medical profession of America. Drs. A. McPhedran and R. W. Bruce Smith replied for the Canadian medical profession.