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EDITORIAL

SIR JONATHAN HUTCHINSON.

The death of such a world-known person as Sir Jonathan Hutchinson calls for some notice. He was born in 1828 and died in 1913, having almost attained the age of 85 years. During these long years he was a most industrious and painstaking worker, and the legacy he left behind him of original research work is truly monumental.

He was apprenticed to a surgeon at York. He there studied at the York Hospital, and took lectures in the York Medical College, where the students were so few that he often formed the sole auditor to the lecturers. Here he came under the teaching of Professor Laycock, who made a great impression on young Hutchinson. Laycock was a staunch advocate of the importance of heredity.

In 1849, Hutchinson settled in London, where his great work was to be done in connection with several of the hospitals of that city, but especially in the wards of the London Hospital. In 1859 he was appointed assistant surgeon and gave lectures on surgery and ophthalmology. In 1863 he became full surgeon, and in 1873 senior surgeon.

In connection with the Royal College of Surgeons he had many positions of trust, such as Hunterian Professor, Bradshaw Lecturer, Hunterian Orator, Air Examiner, one of the Court of Examiners, Trustee, President. He served on the Smallpox Commission of 1881, and the Vaccination Commission of 1890. In 1892 he was elected a Fellow of the Royal Society, and in 1908 was knighted, an honor which he had on several occasions refused.

One of the subjects that early interested him was syphilis. This interest was aroused by a child he saw at York with marks of the inherited disease. He early pointed out the importance of the irregular incisors, the presence of iritis, and what was then called "strumous corneitis," as valuable indications of inherited syphilis, and that those conditions were always found associated. These observations were published in the Ophthalmic Hospital Reports, and afterwards printed in

book form under the title, "A Clinical Memoir on Certain Diseases of the Eye and Ear, Consequent on Inherited Syphilis." He came to be recognized as the highest authority on syphilis in Europe.

Another of his great works was the publication of the Archives of Surgery. A number was issued quarterly for over ten years. The entire work was from his own pen. These "Archives" give the details of cases that came under his observation, and they reveal a wealth of clinical experience that shows what a keen observer of every phase of disease the author was. They are beautifully illustrated.

His work on leprosy is well known. For many years he held that leprosy was caused by the consumption of bad fish. He advanced potent arguments in support of his views. We cannot go into the details of his reasons here.

Perhaps, one of the most noted of all his characteristics was his power as a clinical teacher. He followed every ramification of his along with his students he was the most patient and kindest of men.

A DARK BLOT ON TORONTO.

The infant mortality record is altogether too high for such a city as Toronto. A healthy country surrounds it, and a large lake lies in front of it, and yet the death rate is that 154 out of every 1,000 infants die during the first year. There are always causes for such a condition.

One of these causes is the feeding of babies on improper food and in improper ways. While milk is the natural food of the infant, bad milk is the most deadly food it could receive. Then many mothers are painfully ignorant, and equally careless, as to the care of the child.

Another cause is the extreme over-crowding in certain districts. This is bad on all ages, but alarmingly bad in the case of the very young.

Toronto has now a large foreign population. These people are very dirty in their habits, and have a very low idea of the value of human life.

These are among the causes. Now, as to the remedy. In all slum and foreign districts every house, where the birth of a child is registered, should be regularly visited by one of the nurses under the direction of the Health Department. When the cases are severe, they should be sent to some place for proper care.

CANADIAN MEDICAL ASSOCIATION.

The forty-sixth annual meeting of this association was held at London from the 24th to the 27th of June. In many respects this proved to be one of the most successful that the association has yet held, not only from the point of attendance but from the high standard of the papers read and the discussions as well as the excellent way in which the social entertainments were looked after by the local committee.

A great deal of attention was given to the discussion of general public health and preventive medicine and especially the care of children.

The President, Dr. H. A. McCallum ,in his address, pointed out the fact that there was too much indifference shown to the association by many of the eight thousand doctors of the Dominion, stating that the Association had done considerable toward removing narrow, provincial medical prejudices and in bringing about legislation that resulted in Dominion registration.

Dr. McCallum advocated, during the course of his remarks, the publishing of the Association Journal weekly. However, as he admitted, to accomplish this it would be necessary to obtain a membership of nearly half the registered doctors in Canada, or by means of an endowment fund, but this appears to us to be placing a numerical standard out of reach for the present at least.

He also stated in his remarks that the asociation was in need of funds to rescue the profession from being exploited by the commercial enterprise of certain drug houses.

Referring to medical education, Dr. McCallum stated that out of the criticisms by the Carnegie Foundation for the advancement of teaching, great improvement has arisen almost everywhere.

At the present time he pointed out there was no indication of legislative interference with the freedom of the profession.

THE DOCTOR AND THE AUTOMOBILE.

Should the doctors who drive automobiles be granted special privileges? A good question but what about the answer.

At the present time nearly seventy-five per cent. of the medical men in the larger cities of Ontario use the motor car for making their professional calls. It not infrequently happens that a doctor receives a call where all unnecessary delay means increased peril to the patient.

In such cases he undoubtedly should be afforded all facilities that the law can give him both as to speed limit and traffic regulation at busy corners. The same should apply to motor ambulances, operating under similar circumstances.

The question of providing doctors with some distinctive monogram by which they could be easily recognized and thus given special privileges, recently came before the attention of the Board of Police Commissioners of Toronto, but no action was taken. Their reason for the taking of this stand was that in case of emergency a doctor would be given the right of way, and where life hung in the balance, he would not be prosecuted for breaking speed and traffic regulations. They also held that such cases where speed was necessary were very limited and the granting of such badges or monograms might lead to a great deal of abuse. The Toronto police court is inclined to be lenient on doctors prosecuted for speeding where such speeding was justifiable.

Where such privileges have been accorded medical men such as in Detroit the experiment has worked out very successful and we feel that should the Board of Police Comissions for Toronto only grant similar concessions they would prove equally successful.

THE WORKING OF THE INSURANCE ACT IN BRITAIN.

In any great Act such as this and covering so many and varied interests it would be more than likely that some unforseen difficulties would arise. Experience is now pointing out these, and indicated in what way the Act requires some amendments.

In the first place there is a disposition to allow more to the medical men who work under the Act, and, in this way, make its provisions a possibility.

Another feature that has become apparent is the desire to impose upon the benefit funds. One would have expected that this would be so. In a vast number of persons coming under the scheme there is sure to be the malingerer. It appears that steps will have to be taken to deal severely with this class.

Another feature has been revealed that is not so pleasant to contemplate. A certain number of medical men have been accused of giving out certificates dishonestly ,and in some instances giving them out in advance. What action may be taken in this matter the recent medical jouranls from Britain do not indicate.

A feature of the Act that is of the brighter side, is that there will be somewhere about £58,000 annually to devote to research work. If

this is wisely used an imense amount of good should be done. It is proposed to appoint a commission to take over this phase of the work coming under the Act. If such a commission is chosen, it should be composed of the very ablest men that can be found.

SUPREME IMPERTINENCE.

In the Evening Star a short time ago there appeared a lengthy letter from H. W. Mc Laren, who calls himself a chiroprator. He challenged Dr. McCallum to enter a contest with him. This arose out of some remarks of Dr. McCallum in his presidential address before the Canadian Medical Association.

There are two things in this world of which there is an unlimited supply, namely, ignorance and gall or self assumption. These two qualities are found in the chiropractors and osteopaths in full measure. When a chiropractor challenges to a treating contest and mentions the following list of diseases, one can only feel a sense of profound shame. Here is the list: "Paralysis in its many forms, infantile hemiplegia, paroplegia, monoplegia, diplegia, etc., tuberculosis just at beginning of second stage, heart disease, Bright's disease, diabetes, and appendicitis —in fact, any disease he may name, so long as they shall be a decisive test."

What gross ignorance we have here revealed. A person is ill with paroplegia as the result of a former tranverse myelitis, and the poor chiropractor puts such a case in as one for a curing contest. Then, again, take an old case of Bright's disease that has lasted for ten years. The kidneys are small, hard and with adherent capsule. This, too, in his superb ignorance or gall goes in.

The whole thing comes down to this that chiropractic and osteopthy are in no sense systems of treatment. They are a very limited phase of therapeutics, and under the head of rubbing and manipulation. Suppose a nurse took a course in massage and then started as the exponent of a new system, the analogy would be correst. Organizations, such as the osteopaths and the chiropractors, go on for some time evading the law as well as possible, and then all at once claim "vested rights."

When the Ontario Government apoints the commission already announced, it will be necessary for the medical profession of this province to act with wisdom, tact and firmness. If these bodies are to be allowed to practise under these names, it should be made obligatory that they undergo a thorough course of training. If they have to do this they may not be quite so fond of their chiropratics and osteopathy. They will have to go through a course of study before they can deal with the people, and this is what they do not wish to do.

ORIGINAL CONTRIBUTIONS

ANEURISM OF THE POSTERIOR TIBAL ARTERY: RUPTURE OF THE SAC: OPERATION BY THE MATAS METHOD.

(Endo-aneurysmorrhaphy).*

By A. Primrose, M.B., C.M., Edin., M.R.C.S., Eng.

Associate Professor of Clinical Surgery, University of Toronto; Surgeon to the Toronto General Hospital.

T. D. Archibald, B.A., M.B.

Pathologist, Toronto Western Hospital.

We are indebted to Dr. Matas, of New Orleans, for introducing a method of dealing with aneurism which has proved most efficient in the treatment of such cases. The operation was devised by Dr. Matas for the purpose of effecting a radical cure by taking advantage of a well recognized principle in arteriorrhaphy, namely, that surfaces of intima brought together by suture will heal firmly. It is the reverse of the method adopted in intestinal anastomosis—in the latter we invert the cut edges of intestine so as to bring the endothelium of the serous coat into accurate apposition, while in arteriorrhaphy we evert the cut edges of the blood vessels and introduce sutures in such fashion as to oppose the endothelial surfaces of the intima. Matas splits the aneurismal sac, after temporary control of the circulation through it, and by a series of sutures he brings broad surfaces of intima together and, when healing taking place, the aneurismal sac is permanently obliterated. It is unnecessary to describe the technique in full as this may be found in papers published by Matas or in any recent text-books of operative surgery.

The principles of this method of operating upon aneurisms have been applied by Matas in a variety of ways. First there is the *obliterative suture* in which the sac of the aneurism is entirely obliterated and the circulation through the affected vessel is completely and permanently cut off. Second there is the *restorative suture* which is applicable where a single aperture connects the aneurismal sac with the affected artery. Here the sutures are applied in such fashion as to close the opening and to obliterate the sac while the circulation through the

* Read at the meeting of the Canadian Medical Association, London, June 25th to 27th, 1913.

artery continues in the continuity of the vessel. Third there is the *reconstructive suture* which is applicable to certain types of fusiform aneurism; this is accomplished by introducing a drainage tube of suitable size into the open mouths of the vessel within the sac and introducing sutures over the tube in such a manner as to reconstruct a lumen for the vessel on the deep wall of the sac. The tube is pulled out before the last few sutures are tied. The remaining part of the aneurismal sac is then sutured as in the obliterative method.

In the case reported in the present paper the obliterative suture was employed. The clinical history is as follows:—

G.T., aet. 44, was under treatment in July, 1911, for nephritis and arterio-sclerosis, with slight cardiac hypertrophy; the urine at that time had a specific gravity of 1014 and contained many hyaline and a few granular costs with 2.8 per cent. of albumin. The blood pressure was about 190 MM. Under treatment the albumin diminished to 1 per cent., and the blood pressure dropped to 170 MM. In November, 1911, he suffered from what he thought to be sciatica. During a visit to Texas, on Februrary 8th, 1912, about 11 o'clock in the morning, he experienced pain and swelling, suddenly produced, in the calf of the right leg. The pain continued of varying intensity for a fortnight and then gradually ceased. About the middle of April, 1912, he had another attack of pain which lasted for a short time. At this time he also had an attack of a cerebral nature when he suffered from a peculiar numbness of the left side of the face accompanied by thickness in speech which still persisted to some extent when he came under observation in June. The size of the tumor remained stationary; it had not appreciably altered when he was examined on June 12th, 1912,—four months after its first appearance. The patient had been an alcoholic for some years, at one time taking as much as a bottle of whiskey in 24 hours.

Condition immediately prior to operation:—The patient had marked exophthalmos, and on inquiry this appeared to have been of comparatively recent development, probably within the past six months. There was no enlargement of the thyroid. He had marked arterio-sclerosis. The radial arteries were, like a man of seventy, hard and tortuous. The blood pressure was from 190 to 220 MM. The heart's action was regular and there was no murmur.

Te had a marked tumour of the calf of the right leg. This tumour was not tender on pressure, it was firm and did not pulsate as a whole. The pulsation of the posterior tibial artery could be felt above it and was also found of good quality at the inner ankle, almost if not quite as good as in the left leg. The plusation of the anterior tibial and of the dorsalis pedis was excellent. There was no oedema about the ankle.

There was a well marked bruit, heard on auscultation, over the tumour. This bruit was systolic, loud, rough and blowing. There was also a remarkable musical note which apparently preceded the blowing sound. The circumference around the calf at its most prominent portion was 19½ inches, while the vertical extent of the tumour was 7 inches.

He suffered no pain in the tumour but was considerably crippled by its presence in walking. The urine contained 1.6% of albumin and some hyaline casts. An X-ray picture showed the tumor but nothing more.

On June 15th, 1912, an operation was performed. An Esmarch broad tourniquet was applied after five minutes elevation of the limb. After the tourniquet was applied, the leg having previously been depleted of blood by elevation, the tumor seemed softer and fluctuating in parts.

An incision along the line of the posterior tibial artery was made. One cut through the gastrocnemius and proceeded to incise the soleus but one found the latter markedly oedematous and its substance presented a ground-glass appearance on section; the normal red muscle colour was markedly faint and the tissues had a grey colour. One cut through the soleus and immediately came upon adherent laminated clot. This was really separated from the wall of the cyst and was about the size of a hen's egg in bulk. Beyond this a large cavity contained very dark, almost black, blood clot which lay in a cavity beneath the soleus and having the deeper muscles of the calf in its floor. This blood cyst or haematoma lay in a cavity surrounded everywhere by fibrous walls, the transverse partition of fascia no doubt forming its superficial boundary. It was limited above by the attachment of the soleus to the oblique line of the tibia. The dark blood clot appeared to be of recent origin. The laminated clot was much lighter in colour, in fact it was in places grey. The clot was scooped out with the hand and the cavity washed out with hot saline solution. The interior was now carefully inspected; it was difficult to find any large blood vessel opening into it. On closer inspection, however, one found a patch of the cyst wall which presented a very different appearance from the remaining portion. This proved to be a ruptured aneurismal sac with two openings on its posterior surface into which a probe could be passed, upwards from one opening and downwards from the other. Obviously this ruptured sac was covered by endothelium of the arterial wall. The floor of the larger part of the cyst beyond this small patch, was thrown into longitudinal folds and was formed by the deep muscles. Its surface was roughened irregularly over the greater part of its extent.

The ruptured aneurismal sac was closed by the Matas method. No.

1 chromic catgut was used for the purpose. At first one inserted a row of interrupted sutures to close off the arterial openings, using about eight sutures to the inch and employing a full curved intestinal needle. This was followed by a continuous suture of the same material running longitudinally over the line of the deeper interrupted stitches. A third row was introduced in similar fashion until the aneurismal sac was completely obliterated.

The tourniquet was released after packing the cavity with hot gauze sponges, when slight bleeding occurred from numerous points apparently of venous origin. Hot sponges and pressure caused this to cease almost entirely, but as one feared a haematoma one placed a drainage tube in the lower angle of the wound, then interrupted silk-work gut stitches through the divided muscles and skin. More accurate approximation of muscle was secured by No. 2 sterile catgut. The silkworm gut stitches were tied and the skin brought together by horsehair. A double splint of plaster paris was applied over a suitable dressing.

The blood pressure during operation went up to 260 MM. and it is interesting to observe that there was some oozing of blood into the cavity when this high degree of pressure was reached, the tourniquet being still in place and undisturbed. Immediately before this occurrence the wound was almost absolutely dry.

It was quite obvious that an aneurism of the posterior tibial artery had ruptured. The aneurism was of the fusiform type and about the size of a pigeon's egg. It had ruptured no doubt when the patient experienced the sudden pain and swelling, with the production of a large haematoma beneath the soleus. The laminated blood clot was found in the region of the aneurismal sac only, but is formation must have extended partly beyond the limitations of the arterial portion of the cyst.

A piece of the laminated clot was preserved and when cut across its centre was found to contain a soft, dark, blood clot. It appears that either this clot really occupied the aneurism and that a portion of the aneurismal wall was torn away with the clot, leaving only the patch behind already referred to,—or that part of the aneurismal wall was completely destroyed, or destroyed to such an extent as not to be recognizable.

The patient made a good recovery from operation and left the hospital. He was living in a cottage on Toronto Island during the month of August. He was placed on a special diet, the albumin in the urine diminished to 3-10 of 1%, the blood pressure remained from 170 to 180 MM., and he was enjoying fair health when he was unfortunate

enough to contract pneumonia. At that time his leg was getting strong, his speech was almost normal and he appeared to be remarkably well. He passed his crisis successfully but was suddenly seized with coma of uraemic origin and died in a few hours on September 6th, 1912, having lived about three months after operation. Uufortunately we were not able to obtain a postmortem examination.

The case reported in this paper is perhaps worthy of record because the aneurism was situated in a region in which the operation of Matas has rarely been performed. In only one instance out of 85 in the published statistics of Matas was the posterior tibial the artery affected. Our case is also of interest because the operation was successfully carried out four months after the aneurism had ruptured. Further the patient was severly handicapped for operative procedure by reason of the existence of nephritis along with arterio sclerosis and an unusually high blood pressure.

THE PUBLIC HEALTH ACT OF ONTARIO*

DR. JOHN W. S. MCCULLOUGH,

Chief Officer of Health, Ontario.

THE most important features of the Ontario Oct revised last year are:—

(1) The provision whereby the Province is divided into districts each with a trained medical officer. There are seven of these. Each officer gives all his time to sanitary work within his district.

(2) The reduction in the numbers of members of the local boards, there being five members in places of 4,000 population and upwards, and three members for places of smaller population, including the townships. The medical officer of health is a member of the board and its executive officer.

(3) The tenure of office of the medical officer of health is made permanent. This official cannot be dismissed except for cause and with the consent of the Provincial Board. He must be paid a reasonable salary. Provision is made whereby the municipality pays his expenses for attendance at the annual conference of health officers. This year about 300 were in attendance.

(4) The medical and surgical attendance upon indigents connot

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* Read at the meeting of the Canadian Medical Association, London, June 25th, 1913.

in future be saddled upon the practitioners of the community. The council is required to provide for this.

(5) The period given to report communicable diseases has been shortened to 12 hours instead of 24. Measles and tuberculosis are made placardable diseases.

(6) Isolation hospitals are placed directly under the control of local boards of health and arbitration is provided in case of dispute as to their location outside the municipality.

(7) The onus of placarding premises for communicable disease is placed directly upon the medical officer of health.

(8) Under the regulations the medical officer of health has power to commit a tuberculosis patient in a hospital or sanatarium under certain circumstances.

(9) Power is given to a municipality to regulate and inspect its meat supplies.

(10) Perhaps as important a part of the Act as any is that relating to the establishment of water works and sewerage systems. Neither of these may be begun without the approval of the Provincial Board, and under certain circumstances the board has power to order a municipality to establish a water supply or sewage disposal system.

(11) For the first time in the history of the Province, a sanitary engineer has been appointed under the Provincial Board.

The reports of communicable diseases and births and deaths made by the medical profession are very incomplete. The importance of this question cannot be denied. Some medical men claim they should be paid a fee for such reports. The Ontario Health Officers' Association recently passed a resolution asking the Government to pass legislation requiring a fee of 50 cents for each report of a communicable disease, a birth or a death. This question should in my opinion be freely discussed here. All I have to say about it is this—that the members of the profession will in the future be required to obey the law. So, if they believe themselves entitled to a fee for such reports, they will get it only by making their influence felt in the same manner as other organizations do. If they follow their usual business tactics and wait for Providence to help them, they will get no more recognition than at present. These remarks are made with a view to provoking discussion.

"THE GREAT NEED OF THE PHYSICIANS' ACTIVE CO-OPERATION IN PUBLIC HEALTH WORK."*

By Robert E. Wodehouse, M.D.

Provincial Medical Health Officer, District No. 7, Port Arthur, Ont.

ASKING the physicians for their active co-operation in public health work would seem quite in order, but suggests for thought rather a peculiar condition. It is wonderful the explicit confidence the public of ages have had in the medical profession. We must all of us feel a keen pleasure in having been fortunate enough to have cast our lot with a profession whose early members, must have possessed such exceptionally sterling personal character. The position is. I think, unique — that of holding the medical profession absolutely responsible for the educating of the people, how to prevent illness, as well as carrying out of measures to keep all the public well; while at the same time these medical men had to look for their livelihood from remuneration for treating the unwell members of this same public. In spite of this anomaly, it is my intention to urge you more earnestly to live up to the self-sacrificing practices of our fathers in medicine.

Modern public health work throws open at least five different phases, the detail of which the physician is the best fitted member of our social organization to carry out. He, while making his daily rounds can impart knowledge, in the form of simple facts and methods that will be most beneficial. The lines in which he can be of the most benefit to the health movement, are home hygiene, sexual hygiene, sanitation of water and other food supplies, sanitation of the care of excreta and garbage and their disposal and finally infant wellfare work.

Home hygiene though a suitable subject for discussion at a mothers' meeting, is worthy of the thought of the physician. The small details of the housewife's work will permit of so much curtailing of infection, if simple measures are made a habit—and will result in forming excellent avenues for the spreading of disease if these are neglected. The cheapness of effective measures in killing bacterian foods, utensils, handkerchiefs and bed clothes are worthy of note. Any hovel usually has boiling water and sunlight available. The bacteria pathogenic to man except anthrax, which will withstand, indangerous quantities ,boiling water for fifteen minutes or the drying effects of sunlight for one hour

Sexual hygiene in name at least has become more familiar to the

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* Read at the meeting of the Canadian Medical Association, London, June 24-27, 1913.

public of late than perviously. So many parent hestitate to approach this subject with their children. The physician should know many simple details pretaining to both the male and female body conduct. They could impart these ordinary facts tactfully to the parents or directly to the children much better than anyone else. Why should a boy, reared in a wholesome home, grow up to the age of 18 and have no knowledge of his sexual parts or duties, except what he has gained from some bad, wrongly informed youth, in some shed or outhouse? Is there a shadow of fairness in allowing a little pure simple girl to reach the age of puberty to be frightened to death by the onset of her first mensis,—too ashamed to counsel her guardians as to cause and result?

As true as I stand here these conditions are very common. What is to be feared from putting these useful members of society in possession of knowledge of the proper simple facts? They should be told the debiliting effects of self-abuse and told such practices exist. They also should be informed of the awful results of sexual disorders which are mostly the result of clandestine living.

The sanitation of water and food supplies is very important in the household. The physician in visiting his clients is in a position to note the location of the well, the formation of the earth it is situated in and the physical condition of the water. He can easily ascertain whether the top of the well structure and the cover of the same is impervious to water drip from the cover and the surface of the ground immediately around. Wells are mostly infected from these two sources. Water passing a very little distance through loose earth, gravel or sand tends by the slowness of its passage through the same and the resulting storage formation is very dangerous. Lakes, rivers and some springs are always questionable sources of supply. Personal survey of the catchment area or drainage area to detect privies, cow bires, etc., are more important than laborator analysis.

The care of foods as to proper refrigeration of same and screening —the cleanliness of preparation and production of milk and meats are very important. The scalding or boiling of all food utensils should be insisted upon.

The storage and disposal of human or animal excreta as well as putrefactine garbage warrant close attention. The proper fly-proof structure and maintainence of closets possessing impervious containing vaults is essential. All manure and garbage receptacles should be fly proof and impervious to fluids. In rural communities all garbage should be placed daily in 2 x 4 foot trenches and earth thrown over the same at time of deposit. All manure in any locality should be removed during fly season once every week. This carries away all flies in course of

development to remote parts, from which they will rarely return. Kitchen and laundry slops may be safely drained to cesspools ,septic tanks, etc. The latter properly maintained will accommodate human excreta, but excret should never be drained to cesspools.

Infant wellfare work is a crucial subject for the visiting physician. It is especially worthy of thought during his every-day conduct of practice. All the previous matter and much more has a most direct bearing on the new born babe. There are many simple mattters which an expectant mother and father do not know of or if they do, they have not a proper knowledge of their importance.

The physician should know so many simple details of interest to the wellfare of the babe and should take time to give the parents possession of them. He should know all the best means of keeping up the strength of the mother, her health, and courage during the anti partum months and labor. He should know how best to have the mother's nipples in a condition that the baby will take them readily and the nipples remain free of cracks. If the baby does not manage to nurse the mother's nipples the doctor should be an expert in providing a nipple shield that will easily be kept clean and that will draw out effectively the nipples and make the changing back to the mother's nipples an easy matter. These matters seem too trivial to speak of, but they are the points during the first few days that will decide whether the baby and mother are to have a fair chance or not. If the breast feeding is given up the mother's chances of extra work and worry, as well as the probability of chronic indigestion and final death for the baby are enormously increased.

The urgent need of the co-operation of the physician in public health work cannot be disputed. Education of the householders is absolutely necessary. The family physician's ideas and suggestions are accepted in the home with explicit faith. He is the person whose opinion, above all others, is held in awe. If he were to take time in different occasions to offer suggestions along the many lines he might, he would increase the happiness and welfare of the inmates.

The extraordinary vastness of the many fields of medicine, the general practitioner has to keep himself proficient in, makes it prohibitive that he be a public health expert. He can, nevertheless, procure concise monograms by authentic writers, containing suitable material to cover this work. He should be posted in the modern ideas as to infectic hygiene and sanitation. These studies are in an active state of development and many previously accepted theories are being discarded.

Armed with the proper knowledge, an inclination to advance the work and a faith in the helpful result his efforts will obtain, the physician would be the most useful public health agent in any community.

APPENDECTOMY.

(A Personal Experience.)

ERNEST A. HALL, M.D., C.M., Vancouver, B.C.

WITH apologies to Longfellow:—

"The heights by great men gained and kept,
Were not attained by sudden flight,
But they, while their companions slept,
Were being appendected in the night."

Once to some of us comes a moment to decide whether to relinquish a part of our anatomy which has outlived its usefulness, or to take risks that we know not of. This has been the recent experience of the writer, who with so many others has been called though perhaps somewhat late in life—to be the standard bearers of evolution's forward hosts of the new appendixless humanity. Surely we who have fallen victims to this freak of nature's bungling, are to be congratulated when we view nature bestowed upon us the highest of her honors in selecting us to accelerate the upward racial movement? Be that as it may, the consciousness of an absent appendix gives a peace that passeth understanding, and a buoyancy surprising. Whether this result is physical or psychical, the writer is unable to determine, probably both are factors, but for tonic purposes allow me to offer to my neurasthenic and melancholic friends the greatest of all elixirs—appendectomy.

Having come, seen, and conquered, and having gained "inside information" re the depredations of this erratic remnant of prehistoric usefulness, and modern mendacity, there are a few points worthy of emphasis to which I desire to direct attention, for the last word upon the appendix has not yet been spoken.

But first let me give you some lines which were resurrected while lying in the hospital:—

" 'Way down in the intestine
Its interstices infestin'
Is an alley blind and dark as night,
Leading off to simple nowhere
Catching all stray things that go there
As a man-trap it is really out of sight.

It is apt to stop and grapple
With the seed of grape or apple,

Or a collar button swallowed with our pie;
It is oft-times apt to fright us,
And frequently to bite us,
And to end in reaching mansions in the sky."

However, thanks to Dr. Jones the said mansions are still to let, and the writer has no serious intention of striking skyward in the immediate future.

First, as to symptoms.—We often expect the grouping of too many conditions. In my personal experience, pain was not a prominent factor, there was no nausea nor vomiting, no rigid rectus, yet the appendix was gangrenous. During the day, there were what I considered slight colicky pains every few hours, but with this difference from ordinary colic, the termination of the pain radiated up the loins towards the diaphragm. However, I worked until 6 p.m., when a more severe pain warned me that something unusual was going on. A copious enema completely emptied the colon, when all pain ceased. The temperature was then 100, pulse 78, with some soreness upon pressure over Burney's point. Dr. Greaves was asked to examine, and corroborated my suspicion. From this time until the operation which was at midnight, I felt absolutely well, and had I not known that dead appendices, like dead men, suffer no pain, nor give any indication of the condition upon which they are entering, I might have resisted operation. The appendix died at 6 p.m., when the last pain was felt. In the presence of such evidence, must we not conclude that all pain located in or radiating from the south-west corner of the abdomen has its fountain head in the appendix, until we prove the contrary? At the operation Dr. Jones found a Lane's kink, and evidence of previous inflammation—a previous typhoid twelve years ago was wrongly diagnosed. How many attacks of appendicitis pass undiagnosed, and how much nervous disturbance and malnutrition has its cause in disorders of this organ, we are only beginning to appreciate. Only a few days ago I removed from a young man, whose only symptoms were loss of flesh and rapid diminution of weight, a huge appendix containing a calcareous entrolith, and severe congestion with adhesions, and such experiences are ever increasing. In fact, the advisability of removing the appendix from all children is being forced upon me. It is a greater necessity in Canada than vaccination and less dangerous in the hands of experienced surgeons.

As to the operation, flap-splitting always—no cutting of the muscle, but stretching sufficient to allow examination of the small intestine adjacent to the valve, and the gall passages. When the muscles are stretched and not cut, the wound area, by virtue of the lymph exuda-

tion becoming organized, is thereby made the strongest part of the abdominal wall, and a subsequent hernia well-nigh impossible. In such about, is conditioned only by the pain caused by such a movement. The healing of the appendix stump can go on just as well with the patient moving about as when he is on his back. With an uninfected wound, my patients are as well out of the hospital in five days as if they remained fifteen.

As to pain after the operation, while morphia is contra-indicated in all cases of abdominal pain until the diagnosis is determined, it is applicable after abdominal operations. If the advocate of "no morphia" would try the experiment upon himself, his theories would soon collapse in the reality of practical painful experience. But here the greatest of caution must be exercised, and patients should not be told what drug is being used. The combination of hyoscine is frequently beneficial.

The problem of flatulence after operations is not yet solved. Its solution lies largely in the proper irrigation of the large bowel, a matter of complete ignorance to the vast majority of trained nurses. A rectal tube left in for thirty-six hours is frequently a boon.

As to the bed.—I was surprised to find in one of the best hospitals in Canada, a bed that was not fit to lie upon. So unyielding were the springs, and so hard the hair mattress that after the second day I suffered more from the bed than from the wound, and in disgust and impatience walked over to the lounge and remained there the rest of my hospital term. Kindly note ye who deal with dilapidated humanity that their sufferings are not increased, nor their temper spoiled by hard beds. Pat took a deck passage from Belfast to Liverpool, the sea was cruel and the deck not luxurious, his comment was "Shure and it's many a hardship I've seen, but this is the hardest ship I ever saw." My experience with that bed was similar.

"Gone but not forgotten."

With a scar to mark the place which shall know it no more for ever.

THE TREATMENT OF CANCER BY FULGURATION.*

J. E. Hett, M.D., Berlin, Ontario.

FROM time to time different methods of the treatment of cancer outside of surgery have been advocated only to run their course and die a natural death. The profession, consequently, looks upon any new treatment with considerable suspicion, and justly so, and whilst surgery

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has been severely and unjustly criticized in these tumors those who are in the best position to have information know that with a better understanding of surgical technique a good percentage of cures have been accomplished. What is required very much is a better education of the public to consult the surgeon in the early stages instead of the later stages which only too frequently happens.

Fulguration in its true sense, which will be truly explained is a method of treatment which will not do away with surgery, but is a method in alliance with surgery. The term "fulfuration means lightning," but it has been very much misused in various methods which in their true sense are not fulguration so a short description of the different methods is essential.

Having spent many months in the investigation of the various methods of electrical treatment of cancer by their originators and advocates and having seen many patients treated and investigated the results, I am pleased to state that splendid advances have been made along the electrical lines and that the method of Dr. Keating Hart, of Paris, is the most rational and it certainly is a method which gives remarkable results. In order to understand this method it is essential to differentiate it from the following methods:—

(1) Cauterization by using a specially constructed apparatus with monopolar or bipolar currents with short or long sparks of high frequency, high tension and low amperage often called fulguration.

(2) Cauterization by using a specially constructed apparatus with monopolar or bipolar current with short or long sparks of high frequency and relatively low tension and high amperage. — This is Rivieres method.

(3) Dessication or the drying out of the growth with a monopolar current. The action is not carried to the point of cauterization. It is a short spark of high frequency and high tension. It has a dehydrating action and converts the neoplasm into an inert mass. This is Clark's method. Only very small growths can be treated with this method.

(4) Diathering is a term applied by Nagelschmidt of Berlin, to the raising of the temperature of the tissues to any required extent to the point of tissue coagulation. In the treatment of cancer Nagelschmidt coagulates a layer and removes it, then coagulates another and produced by a special aparatus which produces high amperage and relatively low tension.

(5) Electric-coagulation.—Doyen claims that cancer cells are destroyed by a temperature of 122-131 degrees F., whilst normal cells have a resistance up to 140 degrees. He employs a high frequency current with a range of 10-15 amperes. It is a powerful current and can coagu-

to coagulate the tissues 5 to 8 centimetres in from one to two minutes. cauterization but causes a deep coagulation.

The term "fulguration" should only be applied to a long spark of high frequency and high tension which acts not upon the neoplasm but upon the soil upon which the neoplasm grows or in other words upon the traphic centres. Three groups of facts are relied upon by him for these premises.

(1) That sparking even when used with inadequate surgical operation gives undeniable results, insufficient perhaps, but always very definite.

(2) That the tumor is in no way modified in its appearance or in its vitality, from which one may reasonably conclude that it is not the tumor itself but the condition of its nutrition, that is to say the environment that is transformed.

(3) That laboratory experiments and clinical observations furnish plausible explanation of the foregoing.

The apparatus used consists of a specially constructed resonator with powerful condensor with spark gaps which is connected to a transformer coil with rapid interrupton or transformer in the closed magnetic current. (alternating current). A bellows with a foot pedal or with a tube of carbonic acid gas or the electric pumps with disinfected arc. Special electrodes of the de Keating Hart design (which are here shown).

Operation.—The first step is purely surgical and exactly the same as in the surgical removal of a cancer or sarcoma. It is needless to say that care should be taken to make the removal as complete as possible. Before the wound is sewed up fulguration is applied and let it be clearly understood that only one treatment of fulguration is resorted to and that is before the wound is closed up. The spark must be at least 10 centimeters in length—sparks less than 8 are harmful. The longer the spark which should be at least 10 to 12 centimeters the better. With my apparatus, which was constructed under the supervision of Dr. de Keating Hart there is no difficulty in obtaining a 15 centimeter spark so I use that entirely.

The electrode should be kept in constant motion and must be regularly possed over the surfaces to avoid carbonization of the tissues and to equalize the dosage. A current of air passes through an opening in tube along the electrode and spark upon the tissues which also prevent cauterization. The length of time used in fulfuration is ten minutes for an area of ten square centimeteres. The patient of course is kept under an anaesthetic.

The tissues become somewhat darker on account of the deposit of

small blood clots. One might suppose that there is a slight burning of the tissues but such is not the case. The muscles look like smoked meat. Bones should not be fulgurated as long as muscles and blood vessels not as long as tendons. Good drainage must be resorted to for there is more oozing as in the ordinary operation.

Dr. de Keating Hart claims that fulfuration has given good results in all forms of cancer. In very advanced cases the method has important palliative effects such as suppression of pain, haemorrhage and prolongation of life. Cancer of the breast has given him 39.5 per cent. cures. Cancer of the buccal mucosa 83 per cent. for the periods varying from 7½ months to 2 years. He reported 89 per cent, of successes for a mean duration of 16 months in inoperable sarsomas.

Dr. Wm. Leaman Bainbridge after a thorough investigation of the methods and patients treated had a complete apparatus installed in the New York Skin and Cancer Hospital, and Dr. de Keating Hart was invited to introduce his system in November, 1911.

The operating rooms were crowded by many surgeons. Since that time Dr. Baimbridge has treated many cases. He has as yet not published his results and will not do so until a sufficient time has elapsed to make his report of scientific value.

It is one year now since I began treating cancer with fulguration and so far there have been no recurrences. Time will not permit to describe all the cases so I will report only two who have been kind enough to present themselves here to-day:—

E.K. age 60.—This was the first case treated. He had a large epithelioma on the right cheek which broke down and presented a large opening so that the tongue could be seen. He had been treated for a considerable length of time by the Galvano cautery and pastes but the neopasm simply kept on growing. In July, 1812, the diseased tissue was surgically removed and the wound fulgurated. The wound healed up rapidly and the results which you see here are very gratifying.

J. Mc.K, aged 47, referred to me by Dr. Kacey Parkhill was afflicted with a rodent ulcer which destroyed a large portion of the left side of his nose as well as considerable portions of the middle and inferior turbinated bodies on the left side. He had twice been operated upon, was treated by caustics and with X-rays, all of which were of no avail. In December, 1912, after cutting away the diseased tissue and using the currette freely on the turbinated bodies the skin of the cheek and lips were well undermined and the results are splendid. Fulguration is an auxiliary in surgery and is a method of treatment which gives promises of great hopes in the treatment of malignant neoplasms.

ON THE REDUCING ENDO-ENZYME OF INTERNAL RESPIRATION.

RESPIRATION IN ANIMAL TISSUES.*

By Fraser Harris, M.B., C.M., M.D., B.Sc., London, D.Sc., Birmingham, F.R.S.E.

Professor of Physiology and Histology in the Dalhousie University, Halifax, N.S.

I. Historical.

It has for many years been recognised that both living and "surviving" animal tissues possess deoxidizing or reducing powers.

Hoppe-Seyler (1) in 1883 was the first to draw attention to the presence of powerful reducing processes in living tissues. He suggested that, through reduction, molecular oxygen was rendered active by conversion into nascent oxygent and thus enabled to oxidise certain constituents of tissues after the manner in which hydrogen-saturated palladium-foil can oxidise indigo.

Paul Ehrlich (2) two years later published his researches on the reducing powers of tissues during life and at the moment of death.

He classified tissues as regards their oxygen-avidity as follow:—

1. Those in which indo-phenol blue remains unchanged; these he regarded as saturated with oxygen. Examples: heart, renal cortex and the grey matter of the central nervous system.

2. Those which reduce indo-phenol blue to indo-phenol white, but not alizarine blue to alizarine white. Examples: striated and non-striated muscle, gland-parenchyma.

3. Those which reduce alizarine blue to alizarine white, that is those with the greatest oxygen-avidity. Examples; lung, liver, fat-cells and the gastric mucosa.

Ehrlich injected the pigments subcutaneously intra vitam; he noticed that a certain degree of heat arrested the reducing power, but he did not suggested that tissue-reduction was due to an enzyme.

Between 1888 and 1909 J. de Rey-Pailhade (3) wrote on a substance he called philothion which he regarded as one of the mercaptons, and indistinguishable from cysteine. To this substance he attributed great importance in the fixation of oxygen by tissues.

Spitzer (4) in 1894 noticed that after the death of the animal while the reducing powers of the tissues increased, the oxidising capacity rapidly disappeared. He also noticed that the temperature of 100 degs.

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* Read at the meeting of the Canadian Medical Association, London, June 24 to 27, 1913.

C. might not always destroy the reducing power, whereas it always destroyed the oxidising.

In 1895 Sir Victor Horsley and A. Butler Harris (5) made a report to the Scientific Grants Committee of the British Medical Association on the appearance of tissues of animals injected subcutaneously intra vitam with methylene blue. In the milk and in the urine a leuce form was found. On faradisation of the living cortex erebri these workers demonstrated a state of reduction around the stimulated spot at a time when the blue coloration elsewhere was at its height. The decoloration was not due to ionised hydrogen at the kathode, for when the cortical excitability had disappeared, the reduction of the pigment at a stimulated spot could no longer be obtained.

These workers therefore recognized the simultaneous activity of two processes—oxidation and reduction, the precise color at any moment being the result of the relative predominance of the one process over the other. Frequently they found that oxidation prevailed over reduction.

In 1896 I *(6) found that living tissues of cat and rabbit kidney, liver, heart, glands-reduced the blue potassio-ferric ferrocyanide in the Prussion blue and gelatine injection mixture to the green or white leuco state of the di-potassio ferrous ferrocyanide which on exposure to air slowly, or by treatment with hydrogen peroxide rapidly became blue again.

*At this date I had seen only Ehrlich's paper on oxygen avidity .

The pigment was reduced only in the washed out smaller vessels and capillaries; in presence of blood not washed out of the larger vessels, the Prussian blue remained unreduced. The color of the blood was therefore a purple.

In 1899 the term "reductase" as indicating a tissue-ferment, capable of effecting reduction processes was first used by Abelous and Gerard. (7)

Pozzi-Escot (8) in 1902 published the results of work on the reducing action of vegetable and animal tissues on solutions of indigo, litmus and Prussian blue out of contact with air. He confirmed Rey-Pailhade in finding that the tissues could form hydrogen sulphide from sulphur and could reduce Potassium iodide when out of contact with air.

He held that a reductase might be suspected when a living tissue decomposes H_2 O_2, but does not affect a mixture of guaiacum and H_2 O_2.

Q. A. Herter (9) in 1904 and 1905 published two papers on the reducing powers of living tissues. He injected methylene blue intra vitam. He stated that "the liver usually retains a high grade of re-

ducing activity for several hours after death." He found lung, suprarenal capsule and grey matter of central nervous system all reduced the blue to the leuco state. An animal which was chilled by wet cloths or ice "exhibited the powers of reduction much diminished by cold." Herter showed that conversely the reducing power of the tissues of an animal injected with the microorganisms of a specific fever was increased.

Underhill and Closson (10) in 1905 confirmed Herter's views and came to the conclusion that their experiments demonstrated the simultaneous action of both oxidative and reducing processes in the animal organism.

In 1906 Professor J. C. Irvine and I (11) showed that the intra vitam reduction of Prussian blue was not a deoxidation, but the removal of an ionic charge.

By perfusing the surviving kidney of a sheep with the Prussian blue mixture, I obtained from the ureter an absolutely colorless artificial urine which was blued immediately on treatment with $H_2 O_2$.

Authors with increasing frequency are recognizing the existence of reductase.

Oppenheimer (12) for instance in his large work on "Ferments" does so; most of the authors of text books mention the reducing power of tissues even when they do not recognize reductase.

Some however frankly postulate a reducing ferment, thus G. P. Mudge (13) writes, "If an albino does carry a chromogenous body which only needs the influence of an oxidising or reducing ferment to cause it to produce pigment," etc.

II. Materials Used in Judging of Reduction by Tissues.

These may be classified as:—

I. Those containing, and those not containing oxygen.

II. Those which are and those which are not pigments.

A. Pigments:—

1. Containing oxygen, haemeglobin; methaemoglobin; sodium-indogo-disulphonate.

2. Not containing oxygen; methlyene blue; Prussian blue.

B. Non-pigments:—

1. Those with oxygen, e.g. Sodium nitrate.

2. Those without oxygen, e.g. Ferric chloride.

III. Methods of Studying the Reducing Powers of Tissues.

All the following methods of bringing the pigments and other substances into contact with the tissues or tissue-juices or other preparations of tissues have been tried: (a) immersing pieces of surviving organs in the test substances; (b) mixing the liquids with the press-juice

of disintegrated organs; (c) mixing the liquids with aqueous saline or dilute glycerine "solutions" of reductase; (d) injecting surviving organs with the Prussian blue and gelatine mixture; (e) perfusing this injection mass or for instance, ferric chloride through the vascular system of a surviving organ; (f) perfusing the blood vessels and obtaining in the case of the kidney, artificial urine, in the case of the liver, artificial bile.

As might be expected, the method merely of immersing pieces of tissue was by far the most unsatisfactory. No good results comparable with those got by Dr. Vernon (14) in the case of oxidase were obtained, but in this respect reductase resembles glycogenase, an undoubted endoenzyme.

The routine method followed was to use the press juice from a Klein's press. This was kept sterile under toluene. Its reducing power gradually declined in energy, until at the end of three months it had vanished.

Various extracts of organs were made—aqueous, saline and glycerine—but as their reducing power was considerably weaker than that of press juice, these were not so extensively used in examining the properties of reductase.

Injection of the Prussian blue and gelatine mixture into the blood originally by this method that my attention was drawn to tissue reduction as I suspected that the "fading" of the mixture in the capillaries of the parenchyma of liver and kidney was chemically of the nature of a reduction. This does not constitute a convenient method owing to the liability of the gelatine to "set" if the proper temperature is not maintained.

The revival of the blue color in an injected and almost colorless kidney or liver cut open and exposed to the air or to the action of $H_2 O_2$ is striking when seen for the first time. The vessels on the cut surface begin to show up like letters written in "sympathetic" ink.

It was by this method that I obtained an artificial, gelatinous leuco urine from the sheep's ureter; it became blue on treatment with $H_2 O_2$.

The method of injecting Ferric chloride through the portal system and examining both the hepatic emergent fluid and the contents of of the gall-bladder for ferrous chloride in both of which it was found proved a satisfactory method.

IV. Preparation of the Juice.

The following may be taken as typical of the technique a liver removed fro mthe animal (rabbit, cat, dog, pig) before the heat has left it is perfused through the portal vein with tap water at 40 degs C. or with 0.75% NaCli. until the water from the hepatic vein is colorless. The

organ is then rapidly cut into largish pieces from which a good deal of water is allowed to drain away. The pieces are then cut up into much smaller bits and forced into the juice-press in which they are crushed under considerable pressure. A fawn colored, riscid liquid drips out and is received under toluene. This juice is subsequently ground p with powdered glass and filtered through two layers of cheese cloth to free it from connective-tissue and the debris of blood vessels, etc. Some preventive of putrefaction must be used although any such substances reduce the energy of tissue-respiration.

V. Description of , Typical Observation.

Three cubic centimeters of absolutely fresh press juice prepared as just described, were shaken in a test-tube with 10 c.c. of 0.05% solution of soluble Prussian blue at room temperature (about 17 degs. C.). The blue color began to disappear immediately, and in less than a minute after passing through light blue, light green and greenish grey, the mixture became light grey in color. No trace of pigment remained.

When the same volume of boiled juice was used, no decrease in the intensity of the blue color of the solution was observed at the end of several hours. The reducing activity of the juice was found to diminsh pretty rapidly with time. With a mixture containing 3 c.c. of the press juice 24 hours old and 10 c.c. of 0.05% Prussian blue solution, it was found that ten minutes elapsed before its color became green grey and two hours before it became completely colorless. (grey.)

Examination of Possible Fallacies.

Since the change from the colored to the leuco condition is the sign of reduction having taken place, one must guard against confusing the fading of pigments through reduction with fading from causes other than bic-chemical reduction.

The earliest criticism offered was that the fading of the Prussian which undoubtedly fades Prussian blue does not exist in the tissues or their juices. The inorganic salts of tissues and tissue juices do not bring about any fading of soluble Prussian blue.

Ringer's solution added warm to Prussian blue produces on change of color beyond that due to a corresponding dilution with water.

None of the salts of the tissues, NaCl, KCl, na_2 CO_3, Ca_3 $2(PO_4)$, Na_3 Po_4 in strengths under 1% solution added warm singly or in any kind of combination caused any fading to the green or to the leuco condition, whereas the subsequent addition of such a reducer as pyrogallol at once chased fading through green to white.

When the gelatine and Prussian blue mixture is used to inject organs still living, the pigment is reduced as I believe by the agency of

the living tissues, and histologists aware of this fading, attribute it to "contact with the alkaline salts of the tissues."

Thus Rawitz (16) recommends that a little acetic acid be added to the injection-mass to prevent the "fading" by alkaline tissues.

Naturally, this criticism applies only to pigmentary substances, and has no applicability to non-pigmentary salts used to demonstrate biochemical reduction.

(6). The next source of fallacy one must bear in mind is the possible putrefaction of the proteins of press-juice in speciments of juice kept for more than a few days.

Toluene was the antiseptic used for all press-juices; some kind of antiseptic is absolutely necessary, although Battelli (23) has emphasized the inhibitory effect of antiseptics on the enzymic and respiratory powers of tissues. The antiseptic used had obviously to be one which would not of itself bleach or reduce the pigments or other substances and would not act as a activator or inhibitant of the enzyme. Sodium fluoride and many other substances had to be rejected on some of these grounds. Toluene apparently prevented putrefaction in the press-juices used. Had the reductions in old juice (two to six weeks old) been due to putrefactive or autolytis substances, then the reducing power should have steadily increased with the age of the juice. But exactly the opposite was found, the longer the juice was kept under toluene the *less* it reduced until after ten weeks or so it did not reduce at all. But putrefaction would have been *more* marked as time went on. I had, however, positive evidence of the absence of putrefactive micro-organisms in a specimen of liver juice three months under toluene, which was examined for me by Dr. Sholt Douglas, of the University of Birmingham, and pronounced sterile.

It seems pretty clear, then, that the reductions studied were not brought about by the products of putrefaction or autolysis.

As regards fallacies, another point to be remembered is that the substances employed, Prussian blue, Ferric chloride, etc., are all more or less poisonous. We cannot therefore expect the living tissue to reduce unlimited quantities of such substances whether pigmentary or not.

Thus only the earlier portions of liquids emerging from perfused organs or being secreted into the gall bladder or ureter should be examined for reduced material. Because a kidney, perfused indefinitely long with ferric chloride, does not continue to produce unlimited quantities of ferrous chloride is no evidence that it was not originally able to reduce some of it, for such substances, even in dilute solution, are more or less toxic to living protoplasm, especially in experiments in which that protoplasm is receiving no blood at all.

(c) The last criticism is that of A. Heffter (17) which is directed not so much against the methods of judging of reduction by the fading of pigments, as against the whole conception of tissue-reduction being enzymic in nature. Heffter holds that the labile H. of colloids in such a grouping as cysteine is able to effect all the reductions observed. He says that crystallized egg albumen can bring about many reductions. Heffter's contention is that proteins apart from life can actively reduce.

Confining ourselves first of all to Prussian blue, it is certain that all proteins do not cause this pigment to fade, at least within times measured by hours. For one thing, gelatine itself even without acid does not cause soluble Prussian blue to fade even before it is injected into an organ.

It is well known that this injection-mass mixed with the blood-proteins in the large vessels of mammals at body temperature is not reduced or caused to fade. Neither is methylene blue; those pigments remaining blue produce along with the red of the blood a purple color. If Heffter be correct we should expect the blood-proteins to reduce these pigments to a pale run or leuco condition; this they certainly do not do.

If one mixes a saline solution of pure serum albumen or serum-globulin with Prussian blue, no fading takes place at room temperature within 24 hours.

In 1912 my co-worker, at that time, Dr. H. J. M. Creighton (18), of the Dalhousie University, Halifax, N.S., investigated this subject with very great care and published his results in the Transactions of the Nova Scotian Institute of Science.

Dr. Creighton showed that if one mixes 10 c.c. of a 15 per cent. solution of egg-white in dilute NaCl with 10 c.c. of a 0.05 per cent. solution of soluble Prussian blue (potassium ferric ferrocyanide) and keeps the mixture at 60 deg. C., the color will have faded at the end of an hour. The fading is gradual. Dr. Creighton writes: "With pure white-of-egg or at a high temperature, the decoloration of the soluble Prussian blue was found to proceed with greater rapidity." On the other hand, white-of-egg solution and 0.05 per cent. Prussian blue mixed and kept at room temperature, showed no fading or change of color at the end of six hours.

Dr. Creighton further showed that the iron ion originally trivalent in the soluble Prussian blue is divalent in the colloidal complex of albumen and the pigment. There has therefore been reduction. Further, this colorless colloidal complex can be boiled for a short time without its coagulating. For convenience, I call these phenomena "The Creighton effects." Now there is one significant difference as regards the interaction between pure proteins and soluble Prussian blue, and the inter-

action between press juice and that pigment, namely, that whereas there is no fading of the blue in the presence of protein at the end of many hours the blue in contact with fresh juice fades *at once*. These are clearly not the same phenomena; for, for one thing, in the case of the protein mixture the concentration of protein is very much greater than it is in press-juice, but its effect is very much slower.

Further, if the fading of the pigments is due to protein, then the juice kept for three months in which the protein is well preserved and is sterile, should reduce as well or almost as well as fresh juice; but this is noticeably not so.

Again, the rapid falling-off in potency as regards reduction within the first day, would have no meaning as a phenomenon due to molecular groupings and labile hydrogen, whereas it has a meaning with reference to the deterioration of the bio-chemical activity of a ferment.

The fact that glycerol extracts of dried liver and of dried kidney possesses some reducing power, is more in accord with the conception of that reduction being due to an enzyme than to a protein, for the glycerol extract of *dried* liver had some recognizable reducing power, and it could have taken up very little protein in "solution." Glycerol by itself has no reducing power.

Again, glycerol extracts deteriorate in potency with time for which there is no particular reason, if protein be the active substance. Blood at 40 deg. C. does not reduce ferric chloride, but liver juice at this temperature reduces it to ferrous chloride. There are proteins in both. While giving due weight to Heffter's contentions and indeed recognzing certain phenomena of the fading of pigments in contact with proteins which I have called "The Creighton effects," I still believe that vital reduction is something distinct from these and is probably enzymic.

VII. Indications That a Tissue Endo-Enzyme Exists.

1. The first consideration regarding reduction being due to an enzyme is that whereas quite fresh juice vigorously and older juice more gradually reduces several different kinds of chemical substances, boiled controls do not do so at all.

2. The behaviour of the juice in regard to temperature is the next point indicating the presence of an enzyme.

Its optimum is between 42 deg. C. and 46 deg. C. Thus Herter found reduction processes were accelerated in the experimentally induced fever of hog-cholera. As the temperature falls, the rate of reduction is diminished until at zero reduction is entirely inhibited. But at a temperature as low as minus 14 deg. C., the reducing power is not destroyed; it is merely kept in check.

I have kept under observation a mixture of absolutely fresh liver

juice and Prussian blue, surrounded by a freezing mixture for 24 hours, without noticing the least degree of fading of the deep blue color. On removing the tube from the freezing mixture, the color was completely discharged by the time the juice had reached room-temperature (17 deg. C.),

Herter found in the intact animal that "the power of reduction was much diminished by cold."

A typical experiment may be quoted in connection with temperatures.

Three water-baths were brought to (a) between 40 deg. and 41 deg. C.; (b) between 42 deg. C. and 43 deg. C.; and (c) between 44 deg. C. and 45 deg. C., respectively. In each bath a tube was placed containing 3 c.c. of raw hepatic juice shaken up with 20 c.c. of Prussian blue all under toluene. In 6 hours the tube in (a) was green, that in (b) was green-white, the one in (c) was quite white; twenty-four hours later the tube in (b) was white.

The behaviour of tissue juice is compatible with its active constituent being an enzyme.

3. As judged by the Pozzi-Escot test, a reducing ferment is present in certain tissues, for pieces of tissue, but better their juices decompose H_2O_2 without affecting a mixture of gusiacum and H_2O_2.

That press-juice, for instance of liver, is more active than pieces of liver is in accordance with the findings of other workers on ferments. J. J. R. MacLeod (20) noticed this in the case of glycogenase, an undoubted endo-enzyme.

4. The reducing action is accelerated or augmented by the presence of alkaline salts of the tissues, which behave as adjuvants.

Professor Irvine and I (11) concluded that reductase acter after the manner of pyrogallol, an organic reducer, in an alkaline medium.

5. In my recent work on the action of protoplasmic poisons on reductase, I found that the acidity (concentration of Hions) was a more profund inhibitant of the reducing power than was toxicity. Concentration of H ions is well known as an inhibitant of the activity of certain enzymes, to this reductase would not form any exception.

The fact that reductase is not inactivated by certain virulent protoplasmic poisons—chloriform, solium fluoride, nitro-benzine, formalin—makes reductase comparable with the ferment in the laurel leaf studied by Dr. Waller (24). Chloroform was found to kill the leaf, but to set free an enzyme which liberated HCN.

6. As a ferment reductase is pretty easily inactivated by drying the juices in vacus as 15 deg. C. and by precipitation from juice by abso-

lute alcohol. As might be expected, drying and alcohol injure it less in tissues than in press-juice.

It clings with considerable tenacity to the cell-proteins which evidently guard it from inactivation by heat, by drying and alcohol.

In regard to its sensitiveness towards alcohol, reductase is in marked contrast with glycogenase, which can be obtained in an active state even from livers which have been for months under alcohol. This power that colloids have of protecting enzymes is a well-known property of the relationship between these two classes of bodies.

As judged by the criterion of solubility, reductase is comparatively insoluble, it will not, for instance, dialyse pass into solution in dilute glycerol, it cannot be regarded as entirely of an insoluble nature.

The insoluble endo-enzyme is now fully recognized. Prof. Adrian Brown tells me that phyto-enzymes of a non-soluble order exist, and according to Vernon (22) the oxidase of the liver is insoluble. He adds that its insolubility does not preclude its enzymic nature, as there is a good deal of evidence pointing to a similar property in some lipolytic enzymes.

VIII. Remarks on Tissue Respiratory Ferments.

Besides reductase, at least two other types of enzyme exist in the liver, to confine our attention only to the liver in the meantime, namely, a catalase and an ovidase or a number of oxidases. A catalase has long been recognized in the blood and tissues; Creighton and I (25) recently wrote:

"The existence of a catalytic enzyme in the mammalian liver is fully confirmed. The decomposition of H_2O_2 is eqected by this enzyme, and it not due to the presence of proteins or other organic matter in the preses-juice."

Boiled juice gives rise to no decomposition of H_2O_2, and the amount of H_2O_2 decomposed bears no relation at all to the amount of protein in the juice, for a few drops of a very dilute juice reduced 97.2 per cent. of H_2O_2 in the first five minues. No doubt it is possible that the two enzymes, catalase and reductase, may co-operate in ripatic reductions.

The presence of an oxidase, more probably of oxidases, must be remembered when one is working with the reducing ferment. As Dr. Vernon has shown, there are oxidases in the liver which must of necessity work in the opposite direction to that taken by the reductase.

Hence when we obtain a less distinct reduction than we expect, we have to remember that the oxidase may have been active. We have, in fact, the converse of the difficulty to which Dr. Vernon (14) alluded when investigating "The quantitative estimation of the indophenol exi-

dase of animal tissues," he wrote: "The unavoidable presence of reducing substances, some of which are possibly enzymes or 'reductases,' act in direct antagonism to the oxidases, and under certain conditions entirely overpower them. Hence the absence of an oxidizing action cannot be held to indicate the absence of oxidase unless the conditions are so chosen to give the oxidase the best possible chance of exerting its activity."

At an early stage I had noticed that in a tube in which the Prussian blue had been completely reduced to the leuco state a re-establishing of the color was evident from about the end of the first week onwards. A mixture of fresh liver juice shaken up with pigment of suitable strength would begin to become blue again in spite of the fact that the mixture was covered by a layer either of toluene or of oil to the depth of an inch.

In the routine observations, I made no attempt to eliminate the oxidase of press-juice, but in one experiment Mr. Lovatt Evans and I definitely arranged to exclude the physiological activity of that ferment. Accordingly we kept a sealed-up mixture of liver juice and Prussian blue at room temperature under an atmosphere of pure hydrogen in a completely reduced state for three and a half months. It never showed the slightest re-blueing; on breaking open the tube and adding H_2O_2 the contents immediately became bright blue. Exposure to the air produced the same result more slowly. Evidently the activity of the oxidase was prevented expressing itself owing to there being no oxygen for it to deal with.

According to Spitzer, the vigor of oxidase declines post mortem, whereas that of reductase increases for a time, but is possible that the former phenomenon is the cause of the latter, the increase in the energy of the reductase being only apparent and due to the diminution in that of the oxidase working in the opposite direction.

Dr. Vernon, (14) fixing his attention on the tissue-oxidases, regards reducing ferments as troublesome intruders into his experiments, I on the contrary are forced to recognize oxidases as forming as much a part of the cellular respiratory enzymic mechanism as are reductases.

In some manner with which we are far from being fully acquainted, catalase, oxidase and reductase are all acting simultaneously in the living cells, carrying on the work of tissue-respiration. I have eliminated the activity of the oxidase for a sufficiently long time to allow the reductase untransmitted activity; and conversely Dr. Vernon in his studies on oxidase has to make due allowance for the presence of reducing substances.

Vernon, and also Prof. B. Moore (26) have pointed out several respects in which oxidase differs from reductase.

It is perhaps too soon to formulate any theory of tissue respiration, but when the scheme is outlined it must be one taking cognizance of all the three respiratory types of enzymes and not a scheme framed in terms of oxidase alone.

Provisionally one might say that by reductase oxygen is abstracted from oxyhaemoglobin and brought within the sphere of the activity of the oxidase, which applies it to the oxidation of the carbon, hydrogen, sulphur, phosphorus, etc., in, or in the neighborhood of the living protoplasm.

With regard to haemoglobin, I have direct evidence that liver-juice can reduce this pigment from the fully oxidized two-banded condition to the fully reduced one-banded, within three hours at 41 deg. C. The quantities used were a test-tubeful of solution of oxyhaemoglobin from freshly-drawn defibrinated rabbit's blood, and three grammes of freshly disintegrated liver squeezed before the animal heat had left it. This mixture was shaken up from time to time to distribute the juice, and within a minute or two the solution had begun to lose its brightness which it steadily continued to do. The two bands in the spectrum became progressively hazier until at the end of three hours they had disappeared and been replaced by the single band of haemoglobin, shaking this pigment at once made the two bands re-appear; it was, therefore, reduced, but still oxidizable.

A control, similar in all respects except that the juice was boiled for five minutes, showed no signs of being reduced at the end of 72 hours, a period twenty-four times as long. This solution never did become reduced, but passed normally into the state of methaemoglobin.

A period of three hours may seem a long one in which to have to wait for reduction to haemoglobin, but we must remember that in vitro we have the entireness of the solution finally fully reduced, while in vivo we never have the oxyhaemoglobin fully reduced in consequence of contact with the living tissues during only one transit of the blood. The blood is only fully reduced after the many transits of asphyxia.

I think, then, that we are fully justified in regarding the reductase as the respiratory ferment of the living tissues, the endo-enzybe, through whose reducing power oxygen is spilt off from the oxyhaemoglobin in the several capillary districts.

It would seem to be the ferment which starts the process of internal respiration, oxidase that which continues and completes it.

IX. The Chemical Powers of Reductase.

In conclusion, I should like to point out the true reducing character of the reductase of animal tissues.

(a) In the first place it is a typical deoxidizer in that it removes oxygen from osmium tetroxide and from such substances as oxyhaemoglobin, which is fully reduced, and methaemoglobin (25), which is reduced to the oxy condition.

(b) Substances containing oxygen, but not in a form wholly removable, can be reduced from the higher to the lower state, as when sodium nitrate can be reduced to sodium nitrate (25), or when sodium indigo-disulphonate and sodium alizarine sulphonate are respectively reduced to their pale chromogens.

(c) The reductase can also reduce metallic salts containing no oxygen from their higher to their lower forms, as when ferric chloride is reduced to ferrous chloride (15). Here the change involved is the removal of an ionic charge from the frivalent. Ferri-ion, which becomes the divalent ferro-ion.

(d) Finally, certain pigments containing no oxygen, such as soluble Prussian blue and methylene blue, are reduced to the pale or white chromogenic conditions of the di-potassio-ferrous-ferrocyanide and methylene white respectively.

In all these reductions, the endo-enzyme is behaving after the manner of an inorganic reducing agent in an alkaline medium.

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Physiological Department, Dalhousie University, Halifax, Nova Scotia, March, 1913.

CURRENT MEDICAL LITERATURE

MEDICINE

UNDER THE CHARGE OF A. J. MACKENZIE, B.A., M.B., TORONTO

DRY TREATMENT OF DERMATOSES.

C. J. White, in the *Journal of Cutaneous Diseases* for December, 1912, recommends that in exfoliative dermattis and in pemphigus the patient be required to lie naked in bed, with the bedclothes supported on a frame, until moist areas have practically or entirely ceased to appear. The local treatment advocated consists exclusively in the free application of borated talc, which should be constantly kept in sufficient amount both above, around, and below the patent to absorb immediately any moisture that may appear. No contact between the extremities or the extremities and body should be allowed, the former being spread out and freely dusted with the powder.

Occasionally a moist place fails to dry up, but a crust develops with pus underneath. In such an event the crust should be removed, the drying powder applied, and if suppuration should happen to occur again, an antiseptic lotion, such as black wash, should be temporarily used; black wash is the lotis nigra recognized in the N.F. and is made up as follows: (

℞ Hydrargyri chloridi mitis....gr. xiii (0.88 gramme)
Aquæ .....3i (4 grammes)
Liquoris calcis, q. s. ad .....℥iii (100 grammes)
M. Sig.: For external use. Shake well before using.

To relieve the patient of the discomfort in the nose, ears, mouth, and eyes, caused when the air is dry by the abundance of powder with which he is surrounded, cotton plugs, demulcent gargles, and lozenges and eye washes may be used.

A point of importance in the treatment is to have the patient constantly in the reclining position, even while eating, and attending to the emunctories. Water in abundance should be given by mouth, but the diet restricted to soft solids. Bathing is not to be allowed, as it would interfere with the drying process.

TREATMENT OF GASTRIC ULCER.

E. Quintard, in the *Post-Graduate* for February, 1913, states that no drugs should be given during the first week after a hemorrhage with the possible exception of strychnine hypodermically as a tonic, and codeine to quiet pain if it should persist. The codeine, or opium if it is required, may be combined with belladonna in a suppository:

℞ Codinæ .....gr. ss-i (0.003-0.006 gramme)
Extracti belladonnæ foliorum...(gr. ⅛-¼ (0.008-0.015 gramme)
Extracti hyoscyami unum.
Sig: One suppository to be used every night, morning and night, or every six hours.

If local tenderness should happen to persist in spite of appropriate dietetic treatment and Priessnitz dressings, small blisters may be applied to the affected area. If it be deemed advisable, bismuth subcarbonate in twenty grain to one drachm (1.3 to 4 grammes) does may be given two or three times daily before meals.

THETREATMENT OF TYPHOID FEVER.

O. H. Brown, of St. Louis, after an exhaustive survey of the literature and most successful practice, offers the following summary:

1. The ideal prophylactic treatment of typhoid is the proper disposal of human excreta. Inoculation of dead typhoid bacilli are of very great importance in preventing typhoid and should be used wherever there is suspicion of danger.

2. Inoculations of dead typhoid bacilli are of pronounced benefit in dealing with typhoid carriers and preventing relapses during the course of an attack of the illness.

3. A specific serum of practical value is yet to be found. The results thus far obtained are encouraging.

4. Frazier has recently reported that he aborted six cases of typhoid fever with large doses of ipecac administered in salol-coated capsules.

5. The diet in typhoid fever should consist of a small amount of protein, a small amount of fat, and a large amount of carbohydrate. The preferable protein food is milk and albumin water. The preferable fat is cream, and the preferable carbohydrate is lactose. A pound of the latter may be administered in twenty-four hours.

6. The above diet should reduce the grade of toxemia and should

maintain the patient's weight, and should therefore increase his immunizing power.

7. The typhoid patient should be regularly given copious supplies of water. Cracked ice may be taken continuously during waking hours.

8. Pyrexia may often be controlled by keeping the patient in a cold room where the air is kept freely moving, and by keeping the patient very lightly covered. Arms and legs may require heavy covering.—*International Medical Journal*, May, 1913.)

RIGIDITY OF THE ARTERIES IN CHILDHOOD.

W. Rittenhouse (*Wein, Klin. Woch.*, June 13, 1912, p. 920).—Hamburger has lately shown that appreciable rigidity of the radial and temporal arteries is not uncommon in childhood. He found this condition rare under the age of 6, but frequently from that age, till, at puberty, it is fairly common. This phenomenon is probably due to an increase in the muscular tone of the arteries, and it is frequently associated with nervous and vaso-motor symptoms. The subjects of arterial rigidity are often troubled by such symptoms as palpitation, pain or a sense of oppression in the heart, which may be severe enough to be called vaso-motor angina pectoris. Headaches, attacks of fainting, coldness of the hands and feet, and so-called "school anaemia" are also common accompaniments. All these symptoms are traceable to unstable innervation of the vascular system in certain areas.

The writer has examined 250 children between the ages 2 and 14 to ascertain the frequency with which rigidity of the arteries occurs. Only afebrile children with no serious illness were examined. Children one year old or less were not included, for rigidity of the arteries at this age is invariably associated with cachexia, or malnutrition. Four degrees of rigidity were distinguished, ranging from just perceptible to pipe-stem-like rigidity. Normally, only the movements of the arteries not the arteries themselves can be felt. In several cases the blood pressure was also measured by Hertzs' apparatus to ascertain whether a relation existed between the blood pressure and the rigidity. Often a high blood pressure coincided with a high degree of arterial rigidity, but the exceptions were so numerous that no relation between the two can be assumed. None of 20 children at the age of 2 showed any rigidity of the arteries. Rigidity of the third degree was not observed below the age of 7, and rigidity of the fourth or greatest degree was not found below the age of 10. It is a curious fact that while rigidity of the temporal arteries was commonest under the age of 6, the radial arteries were more

often affected from the age of 7 onwards. Below the age of 7, rigidity of the arteries was exceedingly rare, but it was found in 50 per cent. of the 79 children between the ages 7 and 10, and at the age of puberty it was found in 80 per cent. of the 66 children examined. All the children in whom a high degree of arterial rigidity was detected, exhibited symptoms which, with one exception were nervous. That psychic influences may cause rigidity of the arteries is shown by the fact that is frequently passes off during the examination of the child. Such transitory rigidity was frequently observed to last only a few minutes in the temporal arteries of 2-year-old children. Hamburger has also shown that the degree of arterial rigidity varies frequently in the same child.—*Pediatrics.*

BACTERIAL VACCINE THERAPY.

The committee appointed by the Council of Pharmacy and Chemistry brings to a close (*Journal A. M.*, June 28), its work on the subject of "Bacterial Vaccine Therapy: Its Indications and Limitations." This, the tenth and concluding paper, begins with puerperal infection in which it is said that in childhood fever with streptococci as the predominating organisms inoculation of a stock vaccine of the corresponding microbe has, sometimes, been followed by symptomatic betterment, but many obstetricians believe the antistreptococcic serum brings better results than vaccine in this disease. Careful bacteriologic diagnosis of organisms found in the interior of the uterus should, however, be made. A culture from organisms of the blood is also advised in severe cases. The committee says that the streptococcus is rarely, if ever, of benefit in erysipelas, while its routine use in scarlet fever is not advisable. The oft repeated clams that certain makes of commercial streptococcus and staphylococcus will cure the eseveral types of rheumatism along with arthritis deformans we are told are "gross exaggerations of the actual conditions which are that a very occasional case of subacute or chronic rheumatism appears to improve from the inoculation of these stock vaccines." There is no evidence, avers the committee to justify the use of vaccines in surgical prophylaxis. Likewise, there is little warrant that stock or autogenous vaccines are of value in pneumococcic infections.

Stock vaccines of the gonococcus, like those of the staphylococcus, fulfil a useful purpose in vaccine therapy being indicated in complications of subacute chronic gonorrhea. The use of meningococcus vaccine, for protective immunity is warranted, we are told, especially when cerebrospinal meningitis is epidemic. There is no propriety it is said, dog-

matically, in administering stock colon bacillus vaccine which should, it is urged, be dropped from the list of stock vaccines. Testimony is, on the whole, favorable to the practice of inoculation of typhoid bacillus vaccine designed to confer temporary protection from typhoid annd some contend that the clinical course of the disease itself is favorably modified by its use. Concisely, the committee concludes in this wise: "Vaccine therapy is a highly specialized field of medicine whose successful pursuit calls for a particular training in bacteriology, immunology and clinical medicine. The tredapeutic possibilities of vaccine therapy have been exaggerated. The promiscuous use of the stock bacterial vaccines of commerce in the treatment of acute and chronic infections is an irrational procedure. Ready-mixed commercial vaccines should be abolished. In cases suitable for bacterial therapy, autogenous vaccines are, with few exceptions, superior. Autogenous vaccines should be prepared by those in touch with the patient and not through the agency of remote laboratories."

THE PRESENT POSITION OF URÆMIA.

There are, writes Philipp (*"Prager med. Wochenschrift,"* 17 April, 1913), two main theories as to the origin of uræmic convulsions. One view is that these are caused by the increase of bodies in the blood normally present, but which in health are excreted by the kidneys. The increase of these bodies, or of one of such bodies, in the blood determines the fit. The other theory is that uræmia is caused by poisons which do not normally arise in the body but which are formed by the diseased kidneys. V. Jaksch and others generally found in usæmia an increase of urea, although in a few cases there was no such increase. He writes: "There are two groups of cases: one where there is an increase of urea in the blood and the freezing point of the blood serum is consequently lowered; and a second group where there is no such increase and the freezing point is unchanged." Strauss concluded that it was generally derivatives of albumin metabolism which played the chief part in uræmia. Others also agree with Strauss that in this condition there is a large amount of residual nitrogen as a rule. But while urea and residual nitrogen were not invariably present in uræmia, an investigation of other products of retention was urgent. Beck and Heringham observed that calcium salts could give rise to uræmic-like convulsions, and Widal, as is well known, took to chlorium salts as the malefactors. But each of these views has been rejected by further experience as insufficient. So far none of the substances which can form urea has been proved to cause true uræmia. Nowadays it is held by some that these

substances serve simply as the index of some hitherto unrecognized retained poison. Jaksch in his latest writings regards uræmia as an auto-intoxication; it is not necessary, he says, to look for a specific poison. All the tissues and the blood are impragnated with urinary salts, especially urea. (An attack is apparently determined when saturation point is reached, although v. Jaksch is not quoted to this effect. Recent work tends to abandon auto-intoxication in favor of the theory of inhibitory hormones. Auto-intoxication belongs to the old guard, which is, however, not even yet engaged in its rearguard action).—*Universal Med. Record.*

LARYNGEAL TUBERCULOSIS.

R. Levy, Denver (*Journal A. M. A.*, May 17), thinks that laryngeal tuberculosis is much more frequent than many physicians recognize but he does not think it is becoming more common. The higher percentage in late statistics must be attributed to early diagnosis and careful examination and he believes that the increase is largely in the early stages and that late stage cases are rarer than formerly. Tuberculosis is not only earlier recognized but it is better treated and more often cured or arrested than formerly, and late complications are less frequent. Among the earliest symptoms of laryngeal involvement we find slight intermittent hoarseness as a local expression of a general anemia, often unilateral and on the same side as an existing pulmonary tuberculosis. In such cases a sensitiveness and irritability of the pharynx is also a suggestive early symptom. Pain as a symptom has an uncertain significance. It is not absolutely distinctive of tuberculosis but an important distinctive point is found in its increase in the act of swallowing between meals or at the beginning of a meal. It is unquestionably a valuable symptom but not pathognomonic. The tuberculin test extolled by Von Ruck is not to be absolutely depended on. The sputum-findings do not determine the locality of the disease unless bacteriologic examination of the mucus of the pharynx itself reveals them. A common error is to diagnose laryngeal paralysis from constant or intermittent hoarseness in pulmonary involvement. This is most often due to laryngitis sicca. Some aphonia following hemorrhage, while suggestive, may be due to other causes, but if it occurse before the pulmonary lesion has been detected it has some significance. It is also a mistake to infer largyngeal involvement from sudden hoarseness and aggravation of symptoms generally. This may be due to new foci in the lungs and can be ascribed to the larynx only when shown by objective examina-

tion. The prognosis has much improved of late years but too great an optimism is not advised. If we were to study only the prognosis of early cases it would not be dreaded, but late cases give little hope. Levy thinks that 31 per cent. most nearly represents a reasonable estimate. Statistics show the disease most fatal in the female which may be ascribed to the occurrence of pregnancy—a dangerous complication in any case of tuberculosis. As regards the effect on the voice a large proportion of voices can be restored to usefulness even in cases where extensive destruction of one vocal band has occurred. The least hopeful cases are those with extensive fibroid hypertrophy of the arytenoids and interarytenoid articulation. As regards treatment the consensus of modern opinion supports the following: "1. Treatment by means of rest to vocal organs in conjunction with rest and general hygienic measures. 2. Local measures, modification of surgical procedures. Among these the use of the galvanocautery seems to have at the present time the most advocates. 3. The relief of pain by injection or section of the superior laryngeal nerve. 4. The use of tuberculin." Too much emphasis cannot be laid, Levy says, on the importance of complete vocal rest, and he also insists on securing the proper nasal respiration. Each of the other recommendations enumerated has its advantages stated in some detail. As regards the more radical measures, such as extirpation of the larynx, they are condemned by Levy as long as simple measures have been found so successful.

SURGERY

UNDER THE CHARGE OF A. H. PERFECT, M.B., SURGEON TO THE TORONTO WESTERN HOSPITAL

SURGERY OF THE THYROID.

O. H. Mayo, Rochester, Minn. (*Journal A. M. A.*, July 5), gives a summary of the observations on 5,000 operations on goiters made during the last twenty-five years at the St. Mary's Hospital, Rochester. The occasional large goiter of the cretin has but little active parenchyma and should be removed. He has not seen any permanent success from transplantation in these cases in operating exposure of the left recurrent nerve is not necessary for the experienced operator unless the thyroids have displaced the nerve, and scar tissue from its too free exposure may have bad effects. Introthoracic goiters and deep substernal ones are of serious import and are found about once in fifty operations. Slight substernal projections are much more frequent. While much has been

erroneously attributed to the parathyroids they are worthy of much serious consideration by the operator. Normally there are four and they are quite subject to imperfect development through congestive conditions at birth. Since only one or two may be active they should be avoided in operating by preserving the posterior capsule, especially if both the thyroids are operated on, and it is advisable on account of the difficulty of their identification to preserve all small gland-like bodies beneath or connected with the posterior capsule. Treatment, howver, of operative tetany with calcium lactate and also beeves' parathyroid with thyroid extract has been very effectual. Their experience at St. Mary's with this disease has been limited to one mild temporary case. As regards the nonsurgical treatment, there is no doubt but that many goiters, especially of the adolescent type, undergo a natural resolution, and this is true also of congestions and enlargements during pregnacy. The iodin treatment may have a favorable effect in young patients, but not so often after thirty. Recent experience seems to indicate the use of thymol, asalol and iodin as intestinal antiseptics. The thyroid gland extract is uncertain, but seems to have produced favorable results sometimes in the early treatment. In exophthalmic goiters temporary improvement has followed the use of the x-ray. The cytolytic action for specific action on the thryoid have not fulfilled expectations. In operating the best exposure is to be obtained through a transverse incision loy in the neck, and if further exposure is needed the sternohyoid may be sectioned high in the exposed area. In simple goiters it is best to extirpate a greatly enlarged lobe. If both lobes are symmetrically enlarged, division of the isthmus with double resection of the gland is indicated for the best cosmetic results. Mid-line and encapsulated adenomas should be enucleated with division of isthmus, lateral encapsulated adenomas may be enucleated or the whole extirpated. Symptoms of hyperthyroidism indicate extirpation, but in severe cases, acute attacks or relapses, the conditions should be considered medical until improvement occurs. Mayo mentions here the boiling water treatment of Porter as possibly of value. During the first three or four months of the symptoms extirpation is safe, as the heart is not dilated. If dilated over an inch, primary ligation of the superior thyroid vessels is indicated, to be followed four months later by extirpation. After the first year a much smaller percentage of cases calls for primary ligation. Excluding the malignancy cases the mortality of goiter operations is very low, but it increases with delay. The results of operating on simple goiters are very satisfactory and in hyperthyroidism about 70 per cent. are cured and the remainder are likely to be more or less benefited. With patients in good general condition a general anesthetic, such as ether by the drop

method, is preferred. Patients suffering from grave complications can be carried through extensive operations under local anesthesia with novocain, and a combined local and general anesthesia as advocated by Crile may be sometimes of advantage.

THE SURGICAL TREATMENT OF MENINGITIS.

It must be acknowledged that in so far as treatment is concerned the attitude of the profession at large is one of distinct skepticism in regard to a possible betterment from surgical intervention, and even a greater disbelief in the efficiency of drugs, vaccines, or sera, the prognosis in both the acute and the chronic manifestations of meningitis being, except when the infection is localized and of known origin, usually bad.

Perhaps because of this skepticism in regard to any potential benefit to be derived from intervention, comparatively little attention had been devoted to the relief by surgical means of the pressure and toxic symptoms incident to the meningeal infection, and aside from a lumbar puncture done both for the diagnosis and the relief of headache there is little to be found in surgical literature upon which the earnest seeker after truth and after formulated practice can base his procedure. The conditions of Kopetzky and Haynes are therefore of more than ordinary interest, representing as these do careful studies from a clinical standpoint of a condition at present best understood from the records of the autopsy room. Kopetzky notes that the factors which underlie the clinical pictures are the same in all of the so-called types of meningitis. The results of infection of the tissues and fluids of the central nervous sysmicrobe in the given case is a meningococcus or a streptococcus, provided only that a sufficient number of the organisms gain a foothold and the results of their growth become operative on the tissues of their host.

As a result of this invasion of the fluids and tissues of the central nervous system, the available carbohydrate in the spinal fluid is used up and disappears from the fluid. The disappearance of the copper-reducing body, excepting in the slowly developing tuberculous meningeal infections, is probably the very earliest sign of the activity of the bacteria in the central nervous system. Thus there is afforded a means of diagnosis, in cases of suspected meningeal infection, which clearly differentiates meningitis from all other diseases whose clinical pictures give symptoms habitually referred to the meninges, for example, the meningeal signs of general sepsis (including otitic sepsis), the meningeal symptoms of pneumonia or typhoid fever, etc.

The underlying primal factor which influences the onset of the series of events constituting a vicious cycle remains as yet undetermined. We have an increased amount of cerebrospinal fluid, and an edema of the brain and meningeal tissues acting against each other within the limited space of the cranial vault, both factors exerting a compression force on the blood and nutrient supply and thereby tending to further accept, tentatively at least, the theory that in the use of certain constituents of the spinal fluid by the microbes as a dietary; a change in the composition of the fluid results, altering its tension, and thereby its permeability through the membranes of the cellular elements of the Pacchionian bodies, and that thus there results a stasis in the circulation of the cerebrospinal fluid—the first factor in the production of symptoms of meningitis.

The interference with the circulation of the cerebrospinal fluid and the compressed arterial blood supply produce an anemia, with the resultant picture of increased intracranial pressure. When the intracranial tension reaches a sufficient degree, the "fight for existence" of the vital centres starts, bringing in its train the significant signs from the vasomotor, the respiratory, and the vagus centres.

The symptoms of meningitis fall into two general subdivisions: (1) Those dependent on increased intracranial pressure; (2) those dependent on the growth of bacteria, and on the decomposition products thrown into the circulation from the disintegration of nervous tissue. The former more often than the latter determine the outcome in the given case. It is interesting to note that Soffian in reporting upon the epidemic of spinal meningitis in Texas observes that he reduced intracranial tension to as near normal as possible before injecting the serum, thus breaking the vicious cycle. This reduction of cerebrospinal tension followed by the use of serum gave results characterized as unusually good. Sladen has shown that the removal of 30 Cc. of fluid produced a marked reduction of pressure. It seems obvious that any procedure which places the control of the intracranial pressure within our grasp will be the logical surgical remedy for meningitis. Thereafter the added forces represented by sera, antitoxins, and chemical agents will find increased value in keeping in check the symptoms referable to the second subdivision of the symptomatology.

The early diagnosis, according to Kopetzky, besides those manifestations of meningeal involvement generally recognized as such, lies in the repetition at short intervals of blood-pressure estimations; a progressive increase in which is the first significant sign.

As to the efficient method of reducing pressure this is suggested and has been practised by Haynes (The Surgical Treatment of Meningitis:

Its Scope and Accomplishment). He holds that all forms of meningitis are essentially septic in nature except the toxic, and this may become septic.

That all forms of meningitis kill, some only 10 per cent., others 100 per cent.

That death is caused in the last analysis by increased intracranial pressure progressing to such a point as to finally shut the blood off from the "vital centres."

That death can only be averted by furnishing good blood to the "vital centres" by removal of the intracranial pressure. Other appropriate and secondary measures will contribute to but cannot take the place of this paramount requirement. Irrespective, then, of the particular type of meningitis, of what has or has not been done before for therapeutic purposes, the indication for surgical action rests upon an unfailing chain of symptoms that, in practice at the bedside, can be absolutely determined with accuracy.

These early symptoms are: (1) A rising blood-pressure, determined by the cardiac sphygmomanometer. (2) Edema of papillæ (not "choked disk," which is so late a symptom that it ceases to have any value). (3) Absence of carbohydrates from the cerebrospinal fluid (obtained by lumbar puncture). (4) An irritable or clouding sensorium.

In addition, there may be present a vagus pulse; respirations irregular in depth and rate.

With these pathognomonic symptoms present, no possible consideration can justify delay.

The nearer a patient is to bulbar paralysis the less likely that any operation will save life. Recovery from such compression may not be at all or slowly.

Haynes holds that the purpose of the operation is to open the cisterna magna, relieve intracranial pressure and restore the normal supply of "good blood" to the vital centres. The incision is in the middle line from the occipital protuberance to the spinus process of the axis, and carried down to the occipital bone and posterior arch of the atlas. He strips the periosteum from either side of the occipital bone, terphines transversely at the foramen magnum, and a little less t the upper border. Therefore the dura is opened, the arachnoid is punctured, and the cerebrospinal fluid allowed to escape slowly. As soon as the excess of fluid has escaped the arachnoid is opened widely, the lobes of the cerebellum are raised and separated, and the patency of the foramen of Magendie is assured. A small wick of gutta-percha tissue or rubber is placed withwound. The muscles are replaced and held together by two or three gut sutures. Voluminous dressings are applied. This operation opens

the cisterna magna at its largest and most favorable spot for the evacuation of any fluid it may contain. Drainage established here effectually taps all other adjacent regions within and without the brain and cord. We do not seek to establish drainage merely to provide an exit for purulent cerebrospinal fluid, but to relieve intracranial pressure and restore blood to the vital centres.

Furthermore, once drainage is established, the fresh secretions of cerebrospinal fluid are more potent in their bactericidal elements than before, and every hour gained in life leads to greater probabilities of a complete cure. The operation is not complicated by the protrusion of the cerebellum into the cranial opening, as occurs in all other operations in the cerebellar fossa.

Meningeal infection is attended with an increased amount of cerebrospinal fluid. This causes great intracranial pressure. The cortical surface of the brain is crowded against the inner surface of the skull. A trephine opening made in the skull anywhere over the convexity of the brain (cerebrum or cerebellum), and the dura divided, the brain is crowded forcibly into the opening and tightly "corks it up." At the opened here in the presence of great intracranial pressure without a hernia cerebelli occurring or even a tendency to one appearing.

The entire central cerebellomedullary tract is under direct observation, and, if required, surgical treatment. Moreover, drains can be inserted, laterally if necessary, for draining the lateral fossæ on one or both sides. Should there be adhesions blocking up the foramen of Magendie, these can easily be broken up, merely separating the lobes of the cerebellum without disturbing the medulla. Plugging of the fora- operations suggested and performed in the suboccipital regions do not drain.

Under secondary remedial measures Murphy's intermittent rectal saline enemas continued over the first twenty-four hours are strongly commended. Autovaccines or antitoxins are of possible service. Large doses of hexamethylenamin are approved. This method of drainage is also commended in cases of basal fractures extending into the posterior *peutic Gazette,* June, 1913.

OBSTETRICS AND DISEASES OF CHILDREN

PERNICIOUS VOMITING OF PREGNANCY.

Williams (*Journal of Obstetrics and Gynecology of the British Empire,* November, 1912) confirms in part his views in regard to pernicious vomiting of pregnancy, as given in his monograph in 1905, but admits

that some of his original conclusions were too far reaching. He still divides the condition into three casses—reflex, neurotic and toxemic. In the toxemic type he held that an ammonia coefficient in the urine exceeding ten to fifteen indicated a toxemia and was an indication for promtp termination of pregancy. At present he holds that a high coefficient is not of specific significance and may also be manifested after starvation from the neurotic type.

In the light of a number of cases observed since 1905 he concludes that:

(1) The underlying factor in all cases of vomiting of pregnancy is probably an imperfect reaction on the part of the mother to the growing ovum.

(2) In most cases this is only a predisposing cause, while a reflex or neurotic influence is the exciting factor, and cure usually follows its removal.

(3) The classification of reflex, neurotic and toxemic vomiting still holds. Of these the reflex is the least and the neurotic the most common type, while the toxemic is the most serious.

(4) Pronounced toxemic is accompanied by characteristic lesions and profound changes in metabolism.

(5) The significane of a high ammonia coefficient is not specific.

(6) It should be regarded as a danger signal while the differentiation between the various types is only possible after careful clinical observation. If improvement does not promptly follow appropriate treatment, the existence of toxemia should be assured and abortion promptly induced .

(7) In the absence of genital lesions, a low ammonia coefficient indictates neurotic vomiting, which can be cured by suggestion and dietetic treatment, no matter how ill the patient may appear.

(8) In primiparous women vaginal hysterectomy is the conservative method of emptying the uterus. Nitrous oxide or ether should be used in preference to chloroform for anesthesia.—*Physician and Surgeon.*

MANAGEMENT OF GENITAL TUBERCULOSIS IN THE FEMALE

Dr. Palmer Findley, of Omaha, Nebraska, pointed out that genital tuberculosis in woman was rarely a direct cause of death. The fatal issue was usually determined by a primary lesion in the lung or bowel. In at least fifty per cent. of cases there were some symptoms directly chargeable to the tuberculous lesion in the genital organs. It followed that in fully half the cases there was no urgent indication for operative

interference. Inasmuch as genital tuberculosis was rarely primary, we must discriminate, if we could, between the symptoms directly due to the primary lesion and those due to the secondary lesion in the genital organs. The symptoms referred to the genital organs would usually yield to palliative measures. A radical operation was rarely justified for relief from symptoms caused by genital tuberculosis. There was danger in operative interference from the awakening of a latent primary focus, from the high primary mortality in these cases, and from the possible unnecessary sacrifice of organs, inasmuch as spontaneous healing was a possibility, as in tuberculosis elsewhere in the body. In tuberculos peritonitis the cause of death in ninety per cent, of cases was chargeable to the primary focus. In operating for tuberculous peritonitis it was well to remove the tubes when infected, in order to cut off the source of supply to the peritoneum. The utmost conservatism should be exercised in dealing with ovaries and uteri in young women. The exudative type of tuberculous peritonitis was alone favorable for operation. One should not operate in the presence of a fever or an active primary focus in the body. Medical and hygienic treatment was not to be underrated in the management of these cases. In the absence of severe symptoms directly referred to the lesion in the genitalia or peritoneum, operative measures should give way to the usual hygienic measures, at least for an extended trial.—*N.Y. Med. Jour.*

THE MANAGEMENT OF GRAVE EMERGENCY CASES OF EXTRAUTERINE PREGNANCY.

After admitting that it may be said that nothing new remains to be written on extrauterine pregnancy, Doctor Farrar Cobb of the Massachusetts General Hospital (*Annals of Surgery,* December, 1912) proceeds to place before us several conclusions which are not only new, in the light of the usual teaching, but are interesting and valuable.

Based on a careful study of one hundred thirty-seven hospital cases, the author renews his former contention that grave emergency cases with alarming hemorrhage, of which there are thirty-six in this series including three of interstitial preganacy, absolutely demand operation at the earliest possible movement; and of theese desperate cases it is most significant that a vast majority occur in young women never previously pregnant; that there may be nothing to suggest pregnacy; that the onset may be extremely sudden and that the case may exactly simulate some other acute abdominal condition.

Doctor Cobb emphasizes the fact that in nine of his cases no menstrual period had been skipped and that in no emergency case was the pain in the pelvis but rather in some part of the abdomen, even being localized in the gall-bladder or epigastric regions. The only constant signs or symptoms were those of extreme hemorrhage. In most of the cases there were marked abdominal tenderness and rigidity, and the other evidences which usually suggest acute appendicitis, preforation or other abdominal conditions.

Briefly, the author's conclusions which are of special interest are:

(1) More than thirty-three per cent. of extrauterine pregrancies occur in young women who have never before been pregnant.

(2) Salpingitis, or pelvic infection, is not an essential or frequent causative factor.

(3) Most of the cases of complete rupture with alarming hemorrhage occur in the early weeks, often in the first month. Cases that have gone two months or more are usually of the nonemergency type.

(4) Cases of sudden, severe rupture, until signs of marked intra-abdominal hemorrhage are present, often simulate other grave abdominal emergencies, with abdominal tenderness and rigidity, high white count, fever and vomiting.

(5) The menstrual history cannot be depended upon.

(6) Tubal abortions are nearly as frequent as tubal ruptures.

It is stated that the operation should not be begun until everything is in perfect readiness, including the apparatus for intravenous salt solution, and that in fifteen minutes from the time the anesthetic is started the patient should be back in bed. Morphin subcutaneously and artificial heat are the only methods allowed to combat shock and hemorrhage prior to operation; after treatment consists of the usual methods in hemorrhage.

In the desperate cases, the author sums up his convicitions as follows:

(1) Immediate operation is the method of choice.

(2) Delay even for transfusion is dangerous and fatal, and especially delay with stimulation.

(3) With proper technic and use of intravenous salt solution the percentage of deaths directly due to operation will be very low.

(4) In a very small percentage of cases, direct transfusion will be needed and will save the small number that would be fatal otherwise.

(5) Direct transfusion should be done after operation, notbefore.

(6) At present, with the availability of infusion and direct transfusion, it is criminal for any operator of reasonable skill to delay.—*F. M. L.*, (*Physician and Surgeon.*)

LARYNGOLOGY

ABSTRACT OF PAPERS READ AT THE THIRTY-FIFTH ANNUAL CONGRESS OF AMERICAN LARYNGOLOGICAL ASSOCIATION.

HELD MAY 5, 6 AND 7, 1913, IN WASHINGTON, D.C.—THE PRESIDENT, DR. GEORGE A. LELAND, OF BOSTON, MASS., IN THE CHAIR—

PRESIDENT'S ADDRESS.

Dr. George A. Leland, Boston: Our founders builded wiser than they knew when they chose the throat as a field for their specialty; for here, as shown by modern bacteriology and clinical observation, is the port of entry of many of the diseases to which poor human flesh is heir. It is well established that through the nose and throat may enter the micro-organisms which cause tuberculosis, nephritis, endocarditis, sepsis, cerebrospinal meningitis, acne, erythema nodosum, erysipelas, etc., and by extension up through the eustachion tube, aural diseases of all sorts leading to deafness, pyema, meningitis, intracranial abscess, etc. It is the province of preventive medicine to obviate all this and to put the upper air passages into the best possible shape. If the nose and throat can be put in to proper shape and continuously used, the occupation of the aurist will be gone except for the effects of traumatism and perhaps for the infections.

FURTHER OBSERVATIONS ON SOME ANATOMIC AND CLINICAL RELATIONS OF THE SPHENOID SINUS TO THE CAVERNOUS SINS AND THE THIRD, FOURTH, FIFTH, SIXTH AND VIDIAN NERVES.

Dr. Greenfield Sluder, St. Louis: In a previous communication (last May), in which the question was raised as to the etiology and treatment of migrain, Sluder made the statement that he believed that many (but not all) of the recurrent headaches which bear the name of migrain are sphenoidal empyemata which have lost most, if not all, local signs, or which were started as such empyemata, and that the nerve trunks had become involved either by extension of the inflammation (or its toxin) through the thin wall separating the sphenoid sinus from the adjacent nerve trunks. The results obtained during the past year in a goodly number of cases strengthen his belief in the correctness of the deductions detailed in that report.

Sluder observed that the third, fourth, and three divisions of the fifth, sixth and Vidian frequently lie in close association to the sphenoid

sinus, a deduction drawn from specimens which he studied by cross sections. His findings, with the exceptnion of the Vidian nerve, were corroborated by Ladislaus Onodi (*Archiv, fuer Laryngologie,* Bd. VI., Heft II. July 10, 1912). This author's method was to follow the nerve trunks in certain specimens, sometimes to remove the wall of the sphenoidal sinus, and then to study the relations of the nerve trunks thereby exposed. He found that they were in these close associations for varying distances, sometimes even as much as 20 mm.

He did not consider the cavernous sinus in these relationships. He pictures specimens where the sphenoid sinus extended so close to the clivus of Blumenbach as to make transparency of the separating bone, and shows how this brings the sixth into these associations. From an inspection of Dr. Warren B. Davis' 145 Caucasian speciments showing the nose and accessory sinueses from the eighth week of fetal life to the twenty-fifth year uninterrupted (several speciments for each year, except the eleventh year), Sluder observed that the sphenoid sinus spreads laterally at an early age, reaching to close proximity to the second division of the fifth as early as two and one-half years, and that this condition runs almost constant throughout the series. Its development (Davis) begins in the anterolateral aspect of the body, and slowly extends backward, spreading, howver, rapidly laterally to approach the foramen rotundum, and then proceeding backward. As early as the sixth year the Vidian canal may be approached. Sluder considers that if he is right in the conclusion that the mode of production of these headaches—the pathologic sequences—is the close association of the sphenoid sinus to the nerve trunks, and that the inflammatory processes are transmitted through the thin bone separating the cavity of the sphenoid frm the associated nerve trunks, then it is necessary that such anatomic associations be formed in early life as an explanation of such headaches beginning in early life. Another year of clinical observation strengthens Sluder's belief that the pathologic process underlying these cases is a hyperplastic sphenoiditis. From an observation of 100 cases he concludes that the second division of the fifth and Vidian are the nerves most frequently involved (95 per cent). They may be involved singly, or together, then making the picture which would otherwise emanate from the spheno-palatine ganglion. It is difficult to differentiate this class of cases from sphenopalatine ganglion neuralgia; hence, one should be carefully on guard. Since the previous communication, three medicines have been tried for intrasphenoidal use: Iodid of potassium in water, 2 to 5 per cent., proved to possess nothing upon which its use may be recommended; it is apparently inert. One per cent. chlorotine in water proved to lack recommendations. The proprietary "cresatin"

also failed to prove better adapted for these purposes than carbolic acid or oil of wintergreen. The medicines which have so far proved of greatest benefit are: One per cent. carbolic acid in oil; 2 to 10 per cent. oil of wintergreen and aqueous solutions of sodium salicylate, 2 to 5 per cent. These have been successful in allaying the pain long after the sinus was satisfactorily opened and the wound healed.

THE FAUCIAL TONSIL AS A FOCUS FOR SYSTEMIC INFECTIAON.

Dr. George E. Shambaugh, Chicago: Formerly it was assumed that sore throat occurring in connection with acute rheumatism was but a local manifestation in the pharynx of the general systemic infection. It is now generally believed that sore throat in these cases represents the focus of entrance for the systemic infection. Furthermore, it is generally recognized that sore throat, for the most part acute tonsillitis, is very often the immediate cause for other systemis infections, such as acute endocarditis and acute nephritis. It has not been so generally appreciated that the faucil tonsils are very frequently the foci for chronic systemic infections, such as chronic arthritis, chronic neuritis cardiovascular degeneration, and chronic nephritis. The general practitioner as well as the specialist has not fully appreciated the importance of the relation existing between infections, acute as well as chronic, of the faucial tonsils and certain systemic conditions. Very frequently in ill nourished children the removal of the tonsils results in such an immediate and astonishing improvement in general health that it can hardly be accounted for except on the assumption that the enlarged harmless looking tonsils contained foci for a mild systemic infection. In many of the tonsils there are dilated crypts containing the characterisitc cheesy deposits which from time to time produce acute infection. The small tonsil embedded under a fold from the anterior pillar, and the tonsil with a deep horizontal fissure separating the upper from the middle thirds, are unusually susceptible to acute infections and are especially predisposed to the development of latent foci capable of causing systemic infections. Another type of faucial tonsil which is a frequent source of systemic infection is the stub remaining after partial removal, or where the tonsil has been subjected to igni puncture or surface cauterization. The treatment of a faucil tonsil suspected of harboring foci of infection is the same as such foci elsewhere in the body, namely, thorough removal of the suspected foci.

RESULTS IN A SERIES OF CASES OF TONSILLECTOMY AT THE MASSACHUSETTS GENERAL HOSPITAL, THREE TO FOUR YEARS AFTER OPERATIONS.

Dr. J. Payson Clark, Boston: Postals were sent out in July, 1912, to patients who had been operated on in 1908, and 143 patients respond-

ed by presenting themselves to the clinic in person, where they were subjected to an examination and answered a set of questions with reference to the operation and after-effects. From these results the following summary is presented: The patients, with a few exceptions, were under fifteen years of age at the time of the operation. Hemorrhage after tonsillectomy calling for special treatment was of rare occurrence. The condition for which the tonsils were removed was relieved in nearly every case, even in those in which there was some tonsillar tissue remaining. An improvement of the general health was to be expected after tonsillectomy done for such cause. Children who had had tonsillectomy certainly showed no increased tendency to illness and were probably less susceptible than before the operation. The present health of these children is excellent in the majority of cases. What is apparently tonsil tissue is found much more often than supposed after tonsillectomy. The soft palate was symmetrical and the faucial pillars and tonsil fossæ normal in the great majority of the cases. The accidental cutting off of the uvula in four cases caused no bad symptoms. Most of the cases of sore throat and tonsillitis were relieved by the operation. In many cases in which there appeared to be tonsil tissue remaining, the patients were in perfect health, and in others in which there were symptoms, those were undoubtedly due in many cases to causes other than the tonsil remnants. The ordinary voice or speech may be said to be practically unaffected by tonsillectomy. No investigation was made of the singing voice. In most of the cases in which enlarged cervical glands could be felt, there was tonsil tissue present on the same side. In nearly half the cases in which there was tonsil tissue present, there were no enlarged glands. Carious teeth were apparently a direct cause of some cases of cervical adenitis.

Report of a Case of Ulceration of the Larynx, Perichondritis of the Arytenoid Cartilages, Abscessand Partial Exfoliation of Both Cartilages Resulting From Typhoid Fever.

Dr. J. H. Bryan, Washington: This case is reported in order to emphasize the importance of making regular and systematic examinations of the upper air passages, especially of the larynx, in all cases of typhoid fever, in order to detect the early changes that take place in the mucous membrane of the upper air passages in this disease. The frequency of this complication in typhoid fever in Europe, according to Landgraf, is 11 per cent. of all fatal cases; according to Griesinger, 26 per cent; Kanthack, 26 per cent; Ouskow, 30 per cent. It is difficult to arrive at any conclusion as to the comparative frequency of this complication of typhoid fever in this country and abroad. The figures given by Jackson

seem to show that a much large number of cases of laryngeal involvement occur in this country than is indicated by the figures given by Thompson. The epidemic in which Jackson made his observations was, however, an unusually severe one, and the subjects were largely of a poorly nourished type, and this may account for the apparently greater frequency of this complication in this country. We cannot get at the truth in this matter until more careful observations are made, not only in the hospitals, but in private practice as well.

Thyrotomy for Cancer of the Larynx, With Report of Eleven Cases.

Dr. D. Crosby Greene, Boston: In a paper presented to this association in 1906 we reported the results of an investigation of the lymphatic drainage of the larynx by means of submucous injections to methylen blue and mercury. The results obtained are confirmatory of those reported by others in showing that the network of lymphatic vessels which extends beneath the muccous membrane throughout the interior of the larynx is richer in the number and size of the vessels in the supraglottic region, relatively poorer in the subglottic portion, while on the vocal cords the vessels are very small and widely separted. These anatomic facts account for the slow growth and late development of the disease in the cervical lymph nodes in cases of epithelioma of the cords, and furnish an argument for the possibility of cure in early cases by the operation of thyrotomy and excision of the growth with a wide margin of healthy tissue. This is supported by the result of the operation in the hands of numerous operators, both in this country and abroad, so that at the present time it is almost universally recognized as the proper procedure for the treatment of early intrincis cancer of the larynx. Certain details of the technic have an important bearing on the immediate and after-results of the operation. The steps of the operation are: 1. Ether by inhalation, preceded an hour before by ¼ grain of morphin and 1/150 grain of atropin. 2. With the head slightly extended a median incision is made, extending from the lower border of the hyoid bone to the lower border of the cricoid cartilage. This incision is carried down through the prethyroid muscles until the thyroid and cricoid cartilages and cricothyroid membrane have been definitely exposed. 3. A one per cent. solution of cocain is injected through the cricothyroid membrane into the cavity of the larynx. 4. The patient is now placed in the Trendelenberg position and a thick pad placed under the shoulders to bring the larynx into prominence. 5. The cricothyroid membrane is next incised in the median line, and through this incision a swab of ten per cent. solution of cocain is introduced and applied to the laryn-

geal mucous membrane. 6. The thyroid cartilage, after a pause of five minutes, is divided from below upwards. In young subjects this may be done with a knife, but in the majority of cases where the cartilage has become ossified, it is best to use strong curved scissors with dull points. 7. The thyroid wings are now widely retracted and an examination of the growth made under good illumination. 8. Beginning at the free margin of the thyroid cartilage, on the affected side in front of the growth, the internal perichondrium is elevated from aff the cartilage with a sharp elevator from before backwards to a line well behind the limits of the growth as well as above and below it. All the soft structures are thus freed from the underlying cartilage. 9. Parallel horizontal incisions are now made with scissors above and below the growth. These incisions are carried about one-half inch back of the posterior limit of the growth. 10. The growth with its surrounding tissue is now entirely removed with a wire snare by which the posterior attachments are severed. Much depends on the proper selection of cases. When the growth is so extensive, even though confined within the cavity of the larynx, that the larynx cannot be opened without cutting into the growth, recurrence is not only possible but probable.

Decannulation and Extubation After Tracheotomy and Intubation Respectively.

Dr. Chevalier Jackson, Pittsburgh: The different forms of laryngeal stenosis associated with difficult decannulation or extubation may be classified into the following types: 1. Pain. Breathing through the neck with a properly placed tracheotomy cannula is much easier than breathing through the mouth, that once the patient becomes accustomed to it for quite a while he does not feel that he is getting enough air through the mouth, even though the larynx is perfectly patulous. In addition to this there is a nervous cell habit arising from pervious experience with the stenosis that terrorizes the patient the moment he feels the slightest dyspnoea. 2. Spasmodic. This form of stenosis may be associated with panic, or may be excited by subglottic inammation. It is usually overcome with the treatment of inflammatory conditions that may be present. Doubtless one of the chief causes of adductor spasm is the prolonged wearing of the intubation tube. 3. Paralysis. Bilateral ankylosis of the cricoarytenoid joints may prevent decannulation until the laryngeal stenosis is relieved. This operation is not to be advised except in such cases as have remained rigid for a period of twelve months or more, and this it not meant to include the fixation that is associated with malignant, tuberculous or luetic infiltrations. 5. Neoplasms. Decannulation in neoplastic cases will depend upon the nature of the growth and its curability. 6. Hyperplastic. 7. Cicatricial, (a)

loss of cartilage; (b) loss of muscular tissue; (c) fibrous. The hyperplastic and cicatricial types of organic stenosis preventing decannulation may be classified as follows: 1. Tuberculosis. 2. Lues. 3. Scleroma. 4. Acute infectious diseases, (a) diphtheria; (b) typhoid fever; (c) scarlatina; (d) measles; (e) whooping cough. 5. Decubitus, (a) cannular; (b) tubal. 6. Trauma, (a) tracheotomic; (b) intubational; (c) operative; (d) suicidal. Conditions outside of the paralytic and neoplastic forms are almost all the result of inflammation, often with ulceration and the secondary tissue changes. In the infective granulomata it is practically always the mixed infections from oral sepsis running that do the harm. The chief exception to this is diphtheria, which is in many cases a distinctly necrotic process. In the rare cases in which laryngeal tuberculosis of such severe type as to require tracheotomy is cured, decannulation presents little difficulty after the infiltrations are reduced. The reduction of these infiltrations by the galvanocautery through the laryngeal speculum is readly accomplished. Should cicatricial stenosis from ulceration remain, it is to be treated in the same way as cicatrices from other causes—by laryngostomy. In those old cases of luetic fibrosis little amenable to the older methods of treatment, salvarsan has accomplished wonders. Dr. Emil Mayer has recommended the use of radiotheraphy in the treatment of scleroma. So far, however, the results have been so unsatisfactory that they practically constitute the only cases in which decannulation is impossible. When typhoid fever was prevalent in Pittsburgh, it was found that the ulcerative lesion in the larynx was practically always the result of mixed infection, but in some instances they were due to thrombosis of a small vessel with subsequent necrosis. The after-treatment of these cases is chiefly by prolonged intubation, and in some cases by laryngostomy. Scarlatina may be followed by acute laryngeal stenosis which is cicatricial. Occasionally foreign bodies may ulcerate through from the esophagus into the trachea. A properly fitting tube will not cause any ulceration, if it is free from roughness or sharp edges and is removed sufficiently often to be cleaned. For diphtheria and like conditions I have never seen any improvement on the original O'Dwyer apparatus. When a tracheotomized case reaches the stage when it is to be trained to breathe through the mouth, it is necessary occlude the cannula. For the reduction of exuberant granulations, nothing has yielded better results than resorcin. As a stimulation to epitheliazation the German preparation "scarlet red" (Biebrich) in a sterile 20 per cent. mixture has yielded excellent results during laryngostomy. One of the most common causes is the neglect of frequent changes of dressings.

PERSONAL AND NEWS ITEMS

Ontario.

Dr. W. H. Lowry, of Toronto, while on duty in the ambulance work at Niagara camp, was very seriously injured by his horse rearing and falling backwards upon him. He has made a satisfactory recovery.

The enforcement of Dr. Hastings' regulations regarding the overcrowding and sanitation of the Toronto street cars, as announced on the 9th, is a matter which rests entirely in the hands of the Medical Officer of Health. Taking the step as he did, under the Public Health Act, it is not necessary for the M.O.H. to obtain the ratification of the Provincial Board of Health before proceeding with a rigid enforcement of his instructions.

The operating room at the new General Hospital was put into practical use for the first time 15th July, when two operations were successfully performed. The first case was one from the department for diseases of women, and Dr. F. W. Marlowe was the surgeon.

Beginning on 15th July the patients were gradually removed from day to day from the old General to the new General Hospital. 275 in all were removed.

The first inquest in the New General Hospital was held 21st July on the body of Annie Brown, a domestic, who died, it is alleged, through the use of drugs.

The Eastern Hospital at Brockville is to be enlarged. The proposed outlay is in the neighborhood of $100,000.

Board of Trustees of the Cobourg Hospital have raised the funds necessary to enable them to go on at once with the erection of a new hospital.

The people of Leamington are trying to raise the requisite funds for the erection of a hospital. There is no hospital between Windsor and Chatham.

Dr. Hastings' rules bid fair to put the hokey-pokey ice cream man out of business. Thus disappears another picturesque figure of our childhood.

Mr. Pratt, chairman of the Hamilton Hospital Board, has stated that $50,000 will be required to put the hospital in proper condition, and give the additional accommodation.

Provincial Health Inspector, Dr. Young, about the end of June found a smallpox breeding ground in a township ten miles north of the C.P.R. and north of North Bay.

The Department of Health has just removed a case of smallpox from a house on Gallen Avenue, Toronto. The patient is a child of

three, whose sister was removed from the house a few weeks ago. Both cases were mild. The children's parents remain in the house. The family came here from Calgary.

Quebec.

The Lake Edward Sanatorium is doing good work. The 4th annual report shows that 114 patients have been treated during the four years, and that 98 of these have been discharged, and effort is being made to follow up the condition of health of those who have left.

The open air classes for tubercular children at the King Edward Institute, Montreal, have been so successful that a day camp has been opened for the summer, where the children can be kept out of doors all the time under observation.

The Montreal Children's Memorial Hospital cared for 241 patients last year. Of these, 48 are reported cured, 135 improved, 5 unimproved, 15 not treated, and 16 died. The daily cost was $1.25.

Dr. L. A. Chabot has been appointed Medical Officer of Health for the City of Verdun.

Dr. J. Alex. Hutchison, of Montreal, has been elected a fellow of the American Surgical Association.

A chair of phthisiotherapy has been established at Laval University. Mr. Auguste Richard has given $10,000 for this purpose. Dr. J. E. Dubé has been appointed to the professorship, as he has given much attention to tuberculosis.

The Mount Sinai Sanatorium, at Ste. Agathe, was officially opened recently. The institution is to be enlarged.

The following graduated in medicine from Laval, Quebec branch: J. C. Bedard, W. A. Blagdon, J. A. Belanger, A. B. Cote, M. Dobee, F. R. S. Gervais, Rod Herbert, A. Lapointe, P. H. Laferniere, Eug. R. Rioux, F. X. Trepanier, R. Veilleux, C. Vazina, J. B. Trudel and Villaneuve.

Maritime Provinces.

The plans for the hospital at Wolfville have finally been agreed upon, and the cost will be about $450,000.

Throughout Nova Scotia it is estimated that from 15 to 20 per cent. of the cattle are affected with tuberculosis. On the form at Truro, 75 out of 83 head of cattle gave the reaction.

The Moncton Hospital has 16 private wards and 2 public wards of 11 beds each. During the past year it cared for 700 interim, 500 extreme patients.

The Prince Edward Island Hospital, at Charlottetown, has now an endowment fund of $25,589. Recently Rev. Dr. Brecken bequeathed $5,000.

The Western Provinces.

Dr. McBride, Medical Health Officer, Medicine Hat, has been asked for his resignation. The trouble arose out of criticism passed by the Council on his report as presented at the last meeting. The doctor came back with a criticism of the Council's statements and his resignation resulted.

What promises to be an action of unusual interest will be tried at the next sitting of the Supreme Court at Saskatoon, when Charles R. Elliott, a farmer, brings an action against Dr. H. E. Munro, a prominent physician, for alleged negligence in connection with an operation he performed on plaintiff's leg. The plaintiff's claim is that in February, 1912, he engaged Dr. Munro to attend him in connection with a diseased leg. He avers that on March 20, 1912, while he was under Dr. Munro's care, an operation was performed by Dr. Munro on his leg and that owing to the doctor's negligence plaintiff's left arm was allowed to come in contact with the operating table in such a way that the nerve of his arm was killed and in consequence he lost the power of the arm.

The Winnipeg medical inspection of public school children is preparing an exhibit of photographs to show what is being down for the preservation of the health of the children.

The Convalescent Home and Emergency Hospital at Duncan, B.C., has only been erected two years, and it is found necessary to enlarge it. The daily cost was $2.48.

From Abroad.

Dr. Robert Bridges has been appointed Poet Laureate in succession to the late Alfred Austen. This is the first time a medical man has held this high office.

It is reported that the German emissaries who came to London seeking radium have bought every available gram of the British supply, which is only an eighth of the quantity wanted. They paid cash down. The present price of radium is equivalent to $2,400,000 an ounce.

A medical man in the United States, who took the Friedmann treatment, died a few dags ago. At the site of the injection were found tubercle bacilli, shorter and thicker than the human form.

Burton E. Baker, inventor of the Baker X-ray tube and other machines of that type, died at his home, Hartford, Conn., on 11th July, following an illness since last September, since which time no less than

nine operations were made by scientists in Philadelphia, New York and Hartford in a vain effort to save his life. He was virtually a victim of constant exposure to the X-rays, and despite warnings of his danger four years ago, he had kept at his work until he had perfected one of the very best machines on the market.

Five physicians of the University of Pennsylvania, Philadelphia, who, with Dr. J. E. Sweet, of the same institution, who are charged with cruelty to dogs in vivisection work, entered $5,000 bail 22nd June. Three of the physicians, Dr. Allen J. Smith, former dean of the Medical School, and brother of the provost; Dr. Alfred M. Richards, and Dr. T. Reichert, appeared personally before a masistrate and waived a hearing, and consequently no testimony was taken. The other two defendants, Dr. Richard Mills Pierce and Dr. Alonzo Taylor, are out of the city and bail in their behalf was entered through counsel. Dr. Sweet was given a hearing several weeks ago, and held in bail.

A bronze tablet, designed by Dr. R. Tait McKenzie, has recently been presented to the University of Pennsylvania Hospital, in memory of the late Dr. John Herr Musser.

A recent outbreak of typhoid fever in the Latin Quarter of Paris has been traced to the error of a plumber, who connected a pipe leading from the Seine *eau non potable* with a drinking faucet in the exhibition hall of the Faculty of Medicine, where an international physical training conference had lately been held. The Temple of Hygiene should be the last place from which typhoid infection might be disseminated.

The only charitable institution receiving a direct bequest by the will of the late J. Pierpont Morgan is the House of Rest for Consumptives in New York. The "Amelia Sturgis Morgan Memorial Fund" of $100,000 is created for this institution and is to be dispensed for corporate purposes. The will, however, contains a clause requesting the residuary legatee, Mr. Morgan's son, to continue as long as may seem necessary, the yearly assistance of $100,000 to the Society of the Lying-In Hospital of New York, which was the custom of Mr. Morgan during his lifetime.

Report from Nashville, Tenn., on May 31 announces a gift of $1,000,000 by Mr. Andrew Carnegie to the medical department of Vanderbilt University.

Report from Tokio, Japan, states that a Society of Centenarians has recently been organized in that city. To it are eligible all centenarians and all persons over 80 who desire to live to be 100 . At its initial meeting there was enrolled a membership of 500, of whom the oldest was a woman alleged to be 113.

The executive committee of the organization recently formed to combat the increase of cancer in this country met on June 9 and fixed upon "The American Society for the Control of Cancer" as the official title of the body. A committee was appointed to go to Minneapolis and secure the co-operation of the American Medical Association in the society's campaign against cancer.

Pensions for its members and associate members have been provided by the governing boards of the Rockefeller Institute for Medical Research, and have been financially secured by the generosity of Mr. John D. Rockefeller, who has, with this purpose in view, increased the endowment of the institute by a gift to it of securities amounting to about $500,000 in value. The pension rules which have been adopted provide three-quarters-pay pensions for members of the institute retiring at the age of 65, after 15 or more years of service, and pensions of from one-half to three-quarters of full pay, according to the length of service, for members and associate members who retire at 60 years of age. There is also a provision for total disability after ten years of service, and for widows and orphaned children, at one-half the scale upon which members of the staff are pensioned.

At a joint meeting of the directors of the Mount Sinai Hospital and of the Mount Sinai Training School for Nurses held on May 26, it was decided to enforce anti-typhoid inoculation for all members of the house staff and all nurses, orderlies, attendants and laundresses.

OBITUARY

JERROLD BALL

Dr. Jerrold Ball, for 39 years a practising physician in Toronto, died 5th July at his home, corner of Sherbourne and Shuter streets. Dr. Ball's death removes one of the oldest practitioners in the city and a man who was much loved by both friends and his patients. His death followed complications after a severe attack of appendicitis. He had not been well for a number of weeks, and had been seriously ill about a week. He was 67 years old.

Dr. Ball was a graduate of the old Toronto School of Medicine, completing his course in 1874. He was a Liberal in politics, and a member of the Berkeley Street Methodist church. His widow and one son, Dr. Harold Ball, survive him.

Dr. Ball had a very large practice, and was very generous and good to the poor. Few men ever followed the medical profession in Toronto, who have been more highly esteemed by their clients.

J. B. NEFF.

Dr. J. B. Neff, a very prominent citizen of Port Colborne, died at at the Welland House, where he had been stying for several weeks for the benefit of his health.

He was seventy-three years of age, and had been a well-known practitioner in Port Colborne for many years. He leaves a wife, one son, Edward, of Port Colborne, and two daughters, Mrs. Robert Foster and Mrs. Fred Montgomery of this city. The remains were taken to Port Colborne this evening for burial.

Dr. Neff was born in Hamilton, and had practised for fifty-one years. He was married three times, his widow being formerly Miss Kate Peterson, daughter of the late Robert Peterson of St. Catharines.

SIR JONATHAN HUTCHINSON.

Sir Jonathan Hutchinson, F.R.C.I., M.D., F.R.S., a consulting surgeon and emeritus professor of surgery at London Hospital College, died 23rd June. He was born in 1828. He was president of the Royal College of Surgeons for two years, and was a member of several Royal commissions, including those on smallpox and vaccination. He was the author of several medical and surgical works.

Sir Joathan was one of the greatest authorities on leprosy, which, he contended, was contracted by eating bad fish.

HUTCHINSON J. NASH.

Dr. H. J. Nash, of Forest, Ont., died at his home, 17th May, in the 68th year of his age. Dr. Forest was one of the oldest physicians of Lambton, and had been medical health officer for Forest for some time.

J. D. A. MacDONALD.

Dr. Macdonald of Montreal, died there on 31st May. He was 57 years of age, and a graduate of McGill. He was highly esteemed by his patients for his unfailing kindness.

NATHANIEL H. ALCOCK.

Dr. N. H. Alcock came to Montreal in 1911 to accept the chair in physiology, made vacant by the resignation of Professor Wesley Mills. natural sciences. He held various amatomical and physical positions in Britain before coming to Montreal. He leaves a widow and four children.

FREDERICK FENTON.

Dr. Frederick Fenton, of Toronto, died on Sunday, 27th July, 1913, in his 43rd year. He had been connected with the medical faculty of the University of Toronto for a number of years in the department of gynaecology and obstetrics. He was a good teacher, an excellent practitioner, and enjoyed the confidence of a large clientéle. He was taken ill with an attack of appendicitis and underwent an operation. Peritonitis of a fatal type developed. We extend our sympathy to his widow and children.

BOOK REVIEWS

DISEASES OF THE EAR.

By Philip D. Keurison, M.D., Professor of Otology, New York Polyclinic Medical School and Hospital, Junior Aural Surgeon to the Manhattan Eye, Ear and Throat Hospital, Aural Surgeon to the Willard Parker Hospital for Infectious Diseases, Aural Surgeon to the Polyclinic Hospital, member of the American Laryngological, Rhinological and Otological Society, of the American Otological Society, of the New York Otological Society, and of the New York Academy of Medicine. In the text 331 illustrations and 2 full pages in colors. Philadelphia and London: J. B. Lippincott Company.

In this large volume of 588 pages, the diseases of the ear are covered in an exhaustive manner. The author first lays down a thorough grounding the anatomy of the ear and parts concerned in aural surgery. This is followed by a careful account of the methods of making examinations. This part is sure to be of great value to all who are engaged in treating diseases of the ear. Throughout the whole volume the closest attention is given to diagnosis. In this respect the book will prove very helpful to the general practitioner.

Although much of the book is occupied with surgical methods and procedures, nevertheless, there is much medical treatment to be found in its pages. The author has taken special pains to bring his work up to date. It is evident that that work is intended mainly for those who are ear specialists, and, yet, there so much in it of general interest to physicians that he would do well to give the teachings of the author careful study. We can recommend this volume as exhaustive in text and illustrations, and as a very handsome product of the publisher's skill.

NASAL ACCESSORY SINUSES.

The Catarrhal and Suppurative Diseases of the Accessory Sinuses of the Nose, by Ross Hall Skillern, M.D., Professor of Laryngology, Medico-chirurgical College, Laryngologist to Rush Hospital, Fellow of the American Laryngological, Rhinological and Otological Society, Fellow of the New York Academy of Medicine, member of the Society of German Laryngologists, etc. Philadelphia and London: J. B. Lippincott Company.

The first ninety-eight pages are devoted to general considerations, such as anatomy, function and symptoms. This portion of the book gives a good outline of the diseases of these sinuses and their etiology. This section is followed by four very full chapters on the maxillary sinus, the frontal sinus, the ethmoid labyrinth and the sphenoid sinus. The author makes the statement that his students had so frequently enquired of him to mention to them a suitable book on the subject. While there were several German, French, English and American works that treated of sinus diseases from various aspects, there was none that could be regarded a proper text book on the subject. It was to meet this want that the present text-book was prepared. The author is most lucid in his descriptions of the diseases, the sinuses, and the methods of operation. The illustrations are among the best we have ever seen. To the man in general practice who is constantly coming in contact with this group of affections there could be no safer guide. By following the advice laid down here much suffering would be avoided. As a book it is a splendid example of the best in book making.

DENTAL SURGERY.

A Text-book of Surgery for Dental Students. By G. Percival Mills, M.B., B.S., F.R.C.S., Surgeon to the Royal Orthopaedic and Spinal Hospital, Birmingham, Late Resident Surgical Officer, the General Hospital, Birmingham, and Humphrey Humphreys, M.B., Ch.B., B.D.S., L.D.S., Demonstrator in Dental Surgery at the Birmingham Dental College. Illustrated. London: Edward Arnold. 1913. Price, 12s 6d.

For those whom this book has been prepared it will be of real value. In a simple, clear and condensed manner it sets forth the anatomy and surgery the dental student and dental practitioner may be expected to know. As the title of the book indicates the text is limited to the field of work of the dentist. The volume is well illustrated and the text is excellent. We should think that a book like this would soon become very popular. This is the first edition, but a good book will soon find its way into the hands of those who need it. The publishers are entitled to praise for its attractive form.

HEADACHES.

Its Varieties, Their Nature, Recognition and Treatment. A theoretical and practical treatise for students and practitioners. By Dr. Siegmund Auerbach, Chief of the Polyclinic for Nervous Diseases in Frankfurt. Translated by Ernest Playfair, M.R.C.P. One of the Oxford Medical Manuals. 208 pages. 1913. Toronto: D. T. McAinsh & Co. Price, $1.50.

Few ailments are more common than headache, and there are almost none from which the sufferer seeks with greater earnestness for relief. The author discusses headaches under the following headings: Migraine,

Neurasthenia, rheumatic, in brain disease, with disorders of the special senses, in diseases of the digestive tract, from diseases of the kidney, in infectious diseases, in intoxications, in constitutional diseases, and those due to combinations of the foregoing. The book is not a large one, as it contains only 208 pages, but it is from the pen of a master on this subject as one becomes convinced as he lookes over page after page. This is a book that one can safely call a medical classic. Any one who makes himself familiar with its contents need not be in doubt as to the form of headache he has to treat, and then the treatment is laid down in such explicit terms. The translation is well done.

ELECTROCARDIOGRAPHY.

Clinical Electrocordiography. By Thomas Lewis, M.D., D.Sc., F.R.C.P., Assistant Physician and Lecturer on Cardiac Pathology, University College Hospital, Physician to Out-patients, City of London Hospital. London: Shaw & Son, 7 and 8 Fetter Lane, E.C., printers and publishers.

This is a book giving to the public genuine original investigation. This subject is very scientific, but is sure to make its way. Dr. Lewis shows that there are cases of heart affections that lie beyond the reach of all other methods which yield at once to this method. He claims further that there are an ever-increasing number of cases where the conditions are made clearer by this method of securing heart tracing than by any other. The author contends that this is such a valuable aid to the diagnosis of heart disturbance that it will not be long until the method will be employed in every hospital. We wish the author much success along this line of investigation. So far, we can praise highly what he has done.

FOOD AND FEEDING IN HEALTH AND DISEASE.

A Manual of Practical Dietetics. By Chalmers Watson, M.D., F.R.C.P.E., Assistant Physician, Royal Infirmary, Edinburgh . Second edition, revised. 638 pages. 1913. Toronto: D. T. McAinsh & Co. Price, $5.00.

The author states as a work on food in health and disease he has departed quite freely from the usual course adopted by writers. He pays much less attention to the heat value of foods, and much more to their relation to digestive and the bacteriology of the digestive canal. There is a carefully written account of foods and their functions in digestion, absorption, the daily amount of food required, the many factors that modify this. Special foods are taken up such as milk and eggs, animal foods, vegetable foods, the mineral elements in foods, beverages of all sorts. Proprietary foods are considered, and the various food preser-

vatives in use. The diet for the different periods of life receive full attention. The effects of under-feeding and overfeeding are discussed at length. A full share of space is given to infant feeding, and the diet suitable for infective conditions. Then follow chapters on the diet of diseases of the different diseases, organs and blood conditions. An interesting section is that dealing with the many diet cures. This very imperfect summary of the contents of the book will go to show that a wide field is covered. The book is well written, in clear language, and with good descriptive force. This is undoubtedly one of the best books on this subject. It can be safely taken on all occasions and in all diseases as a sound guide through one of the most difficult subjects in practical medicine and therapeutics.

PRICE'S HYGIENE AND SANITATION FOR NURSES.

A Text-book for Nurses. By George M. Price, M.D., Director, Joint Board of Sanitary Control; Director of Investigation, New York State Factory Commission. 12mo., 236 pages. Philadelphia and New York: Lea & Febiger, Publishers. 1913. Price, cloth, $1.50 net.

All medical men have for years realized the great possibilities of hygiene and preventive medicine, and though much good has everywhere been accomplished by the institution of hygiene measures, a great deal remains to be done, and this must be largely achieved through the education of the public. In the attainment of this end no factor is as important as the nurse. Every day she has oportunities to impress upon the laity some of the principles of hygiene and their practical application, and it is therefore one of the most essential elements of her training that she should be well informed on a subject of such universal importance. This new work from the pen of Dr. Price is admirably suited to the needs of the nurse in the discharge of her professional duties and its simplicity of diction renders it equally valuable for home use. The instructions and rules are laid down in a very succinct, but clear manner. A nurse who makes herself familiar with the contents of this book will be able to add very materially to her useful work in the homes where she may be called to take charge of patients. It is a work to be recommended to all persons interested in the prevention of the spread of disease.

SMALLWOOD'S BIOLOGY.

A Text-book of Biology. For Students in Medical, Technical and General Courses. By William Martin Smallwood, Ph.D. (Harvard), Professor of Comparative Anatomy in the Liberal Arts College of Syracuse University, and in charge

of Forest Zoology in the New York State College of Forestry at Syracuse. Octavo, 285 pages, illustrated with 243 engravings and 13 plates, in colors and monochrome. Philadelphia and New York: Lea & Febiger, Publishers. 1913. Price, cloth, $2.75 net.

Biology is now recognized as one of the fundamental sciences in the study of medicine, and most of the medical colleges of this country either require a knowledge of it for entrance, or include it as part of the preliminary instruction. This has given a new stimulus to the teaching of this subject, and has awakened a broader interest in it than ever before. The appearance of a new text-book, written in accordance with the most modern ideas, and designed to meet the needs of the medical studnt, is therefore timely. Professor Smallwood's work is unique in the excellence of its instruction and the high standard of its numerous illustrations. The method of imparting the facts leads the reader to think for himself and cultivates his powers of observation—a very important point. To this physician who graduated before Biology was generally taught in the medical curriculum the book should be of especial interest and value.

The text is not too lengthy and it is written in a style that gives attractiveness to the study of the subject. One of the difficulties in books of this sort is an abstruseness which happily are entirely abscent here. While it is a book that must be studied, yet it is one that will also be read with pleasure.

MISCELLANEOUS

DOMINION REGISTRATION.

Dminion medical registration is now an accomplished fact. The adjourned meeting of the Medical Council of Canada—better known as the Dominion Medical Council—was held in Ottawa during the week ending June 21st. With one exception, through illness, all the members, thirty-two in number, were present. The utmost harmony prevailed, and much work was accomplished, including the passing of regulations requiring the approval of the Governor-in-Council. The subjects of examination were decided upon, being practically anatomy and physiology of the primaries and all the final branches—written, oral, and clinical. A staff of twenty examiners, both French and English, was selected for the work. The city of Montreal was chosen as the centre fr all the examinations for this year, and the date decided upon was October 7th. At the first meeting of the Council in November last, it was thought advisable to hold the examinations in four places simultaneously, namely, Halifax, Montreal, Toronto, and Winnipeg; but the

scheme had to be abandoned owing to the enormous expense involved, and the feeling that the examinations would lack uniformity. While Montreal has been chosen as the centre for the present year only, it it not unlikely that the idea of selecting one town in place of four will prevail in the future; and while there are seven teaching centres in the Dominion, at any one of which the examinations could be held, those having the greater clinical facilities may reasonably be preferred, and a system of rotation established. It is probable that the examination of Laval University students will always take place in Montreal or Quebec.

The register of the Medical Council of Canada will be opened on July 1st of this year. This was considered a propitious date, being the anniversary of the confederation of the provinces; and thus the anniversary of the confederation of the provinces and that of the medical profession in Canada would run concurrently. Those who have been ten years in practice may register, therefore, on July 1st. Section 18, sub-section 2, of the Act reads: "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 subsection, such medical council may, as a condition to provincial registration, exact an examination in the final subjects from practitioners registered upder this sub-section and the said examination shall be held according to the provisions of the by-laws or rules of the respective provincial council."

Under this section, any medical practitioner who has been licensed or has received a certificate, in any province prior to the date of the constitution of the Council, and has been engaged in the active practice of medicine, after ten years—part of which may elapse before the Council was constituted—may become entitled to apply for and receive a license. Consequently, the candidate who has been in active practice and has been licensed for nine years and six months at the date when the Council was constituted will have to wait for six months, and may then apply for registration without examination. Concerning the proviso, it was distinctly understood at the meeting that this would be exacted by one province only, namely British Columbia.

With reference to the other class of candidates for the licence, namely those of whom an examination is exacted, clause 12 of the Act provides for them. It reads thus: "No candidate shall be eligible for any examination prescribed by the Council unless he is the holder of a provincial licence, 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." The phrase in this clause which has given rise to a great deal of discussion, namely, "his own provincial medical council, has been interpreted by the solicitor of the Council as follows: "The provincial medical council referred to by this clause would be the council by which the candidate has been matriculated or entered as a student. Where no matriculation or entrance examination is required by the provincial medical council, a candidate is entitled to apply to the provincial medical council in which he has his domicile and to obtain a certificate from the registrar of such provincial medical council stating in the language of the amended section that he is the holder of a medical degree accepted and approved of by the medical council of the province."

PROFESSORSHIP VACANT.

Applications for the position of Professor and Demonstrator of Organic and Physiological Chemistry in the School of Dentistry of the Royal College of Dental Surgeons of Ontario, vacant by the resignation of Dr. H. S. Raper, (with statement of qualifications and testimonials) will be received by the undersigned until September 15th, 1913.

J. B. WILLMOTT,
Secretary R. C. D. S. of Ontario
96 College St., Toronto.

AMERICAN ASSOCIATION FOR CANCER RESEARCH.

At the annual meeting of the American Association for Cancer Research, May 5, 1913, the following resolution (the report of the Committee on Statistics and Public Education) was unanimously adopted:

It is the sentiment of this Association that:

(1) The present instruction of medical students in the symptoms and early diagnosis of cancer is seriously deficient.

(2) The medical curriculum should include special lectures in the clinical departments dealing specifically with this subject.

(3) The universities should provide competent lecturers in this subject to address the local medical societies.

(4) The associate members of the Association should be urged to take up the question of the proper methods of approaching the public on the subject of cancer.

(5) The activities of this Association should at present be chiefly confined to the education of the medical profession.

(6) This resolution shall be sent to the deans of the medical schools and the secretaries of the State medical societies in the United States and published in the medical press.

CASES OF COMMUNICABLE DISEASES IN ONTARIO.

In the tabulation of communicable diseases reported to the Provincial Board of Health during the month of June, measles, while showing a falling off of 494 cases, yet heads the list with 904, as compared with 116 for the same month last year, and scarlet fever is next with 212. The total number of cases is 1,566, as against 929 a year ago.

The details are as follows:

Diseases	Cases.	Deaths.	Cases.	Deaths.
Smallpox	62	0	45	1
Scarlet fever	212	8	310	13
Diphtheria	139	16	211	28
Measles	904	10	116	19
Whooping cough	57	9	29	4
Typhoid fever	41	6	81	20
Tuberculosis	143	99	129	118
Infantile paralysis	4	2	4	0
Cerebro-spinal meningitis.	4	4	4	4
	1,566	154	929	207

THE ONTARIO MEDICAL COUNCIL, JULY, 1912.

On opening the annual session of the Ontario Medical Council, Dr. Otto J. Klotz, of Ottawa, was elected president, and Dr. McCarthy, of London, vice-president.

After some discussion the following resolution was unanimously adopted: Moved by Dr. William Spankie, Kingston, and seconded by Dr. R. J. Gibson, of the Sault, "Whereas it is provided by the constitu-

tion and rules of the Medical Council of Canada that practitioners of ten or more years' experience in any Province of Canada may register with the Dominion Medical Council, and whereas such registration does not necessarily carry with it the right to register in any Province unless the council of such Province is satisfied:

"Be it therefore resolved that this council hereby instruct our Registrar to accept Dominion registration as full qualification for license in Ontario, subject only to the production of the necessary credentials and the payment of the usual fee."

Sir James Grant called for three cheers for Dr. T. G. Roddick, of Montreal, father of the act incorporating the Dominion Medical Council, and the council stood as they complied.

The council passed a resolution providing that students qualified to appear for examination by the council could, upon the payment of a $25 fee, secure a certificate of qualification from the registrar in order to take the Dominion examination.

In order to further the Canadianizing of the medical profession—the aim of the new Dominion Act now in force—the council added to the foregoing resolution a section providing that practicing physicians might secure from the registrar of the college a certificate of credentials entitling him to take the Dominion examination. A fee of $5 was fixed for the certificate.

The Board of Examiners reported 29 successful and 15 unsuccessful candidates for the fall examinations of 1912, and 65 successful and 37 unsuccessful candidates for those held this spring. Several members of the Council complained that the number "plucked" was out of proportion to the number trying, and declared that something was wrong somewhere. Dr. J. M. McCallum objected that the examiners had not placed the maximum marks opposite the questions on the different papers and that this did not give the candidates a fair idea of the value of what they attempted to answer. Dr. Bray, the Registrar, explained that this year the examiners had neglected their duty in that respect and promised to see that it was made compulsory next year.

The names of two practitioners in the Province, Dr. Benjamin Hawke, of Toronto, and Dr. A. W. Stinson, of Brighton, were erased from the registration book of the Council, the committee on conduct having found them guilty of "infamous and disgraceful conduct in a professional respect." The motion to annul their licenses passed unanimously. Dr. Hawke has been a fugitive from Canada for a year on account of a warrant issued by the Toronto authorities.

On motion of Dr. W. Spankie it was agreed to hold supplemental

examinations in November for those who failed at the examinations in the early part of the summer.

The Council approved the appointment of Mr. John Fyfe as its prosecutor for the year, the salary to be $1,200, with a $1,000 bond.

Dr. J. S. Hart, of Toronto, was not successful in his attempt to have the indemnity of members of the Council raised. It is now $100 and a five-cent mileage rate.

Unlicensed practitioners in Northern Ontario will be prosecuted, according to the Medical Act. A report was brought in at the final session of the Ontario Medical Council that among the Finlanders and the foreign population generally there were several supposed doctors practising who had no licenses. A copy of a Finnish newspaper was secured and translated which showed that the suspicions of the Council were justified. Action will be taken as soon as possible.

The general practice of the Council has been to interfere with such cases only when there were licensed practitioners in the same district. Otherwise interim certificates were granted or no action taken.

The question of redistribution of representation to the Council came up, but nothing was done and the matter was left over for next year. Dr. Spankie urged that the Provincial Secretary be informed that the medical profession of Ontario has less representation in the Council than in any other Province, and that the need for greater representation be impressed on him.

A motion was made by Dr. Hart to have a new directory of the medical practitioners in the Province published, but failed to carry. Owing to the expense and the impossibility of securing a perfect register the question was dropped.

A deficit of $810.00 was reported by the Finance Committee.

The next spring examination to be conducted by the Council will begin on May 26, 1914, and the Council will convene next year in the first week in July.

MEAFORD SMALLPOX.

There were no church services on 6th July, and when people are not privileged to meet for worship, they are not to be permitted to meet for the purposes of discussing party politics. Even a ball match advertised for Saturday afternoon was called off.

Dr. J. Jordan, health officer of the town, is carrying out rigidly the orders from Dr. McNally, the district medical health officer, respecting smallpox. There have been no new cases for over a week, and some of those in the hospital are being discharged every day. There were ten left and these would soon be discharged.
