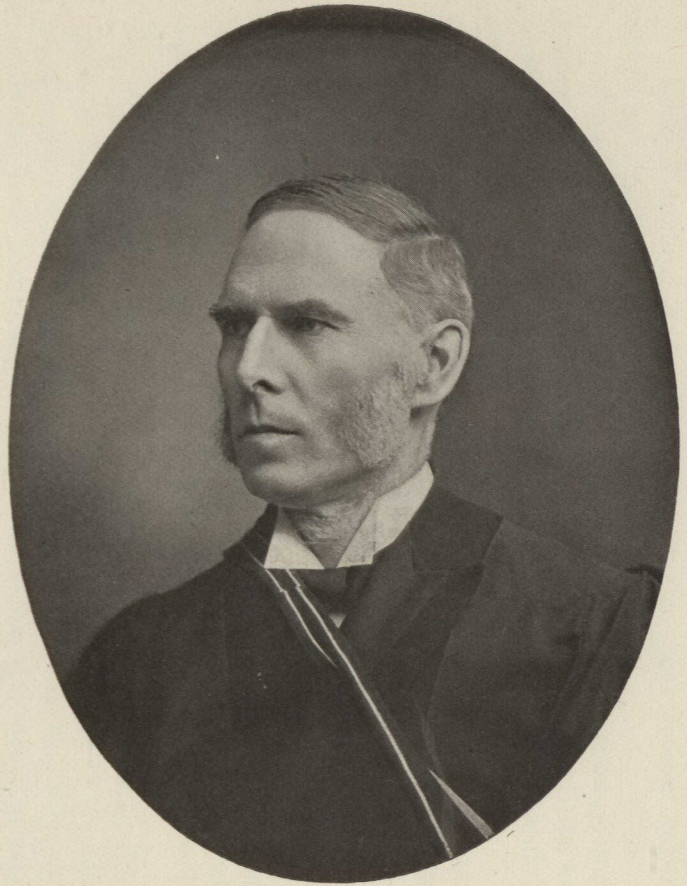

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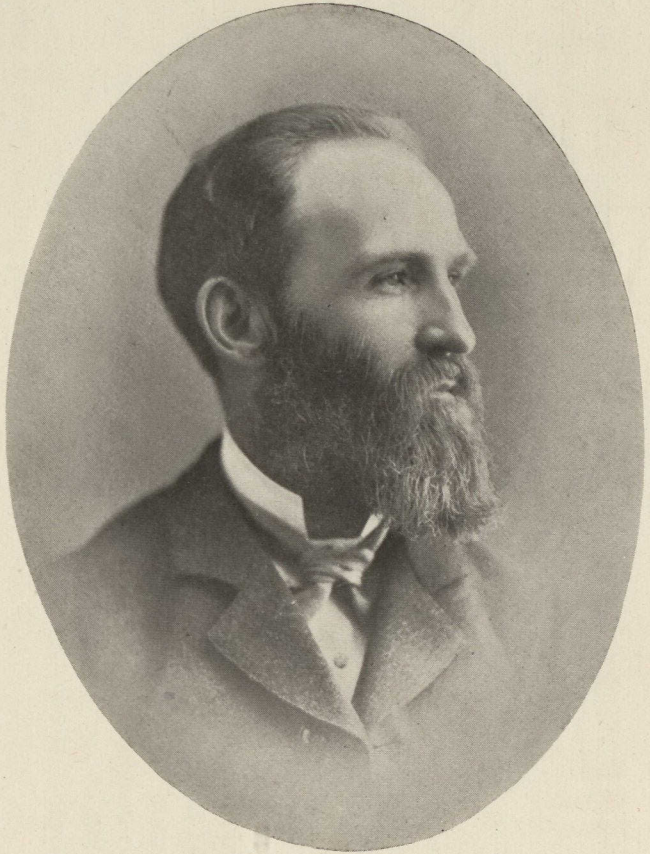

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* THE SURGERY OF TO-DAY.

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Mr. President and Members of the Canadian Medical Association.

IT is a double pleasure for me to deliver this address. One is professional and the other social. In the first place, it has given me a plausible excuse to attend the Canada Medical Association a second time and profit by its proceedings, as well as enjoy the bounteous hospitality associated with it. And the very courteous invitation through my old friend, Dr. Wishart, I could not well refuse, affording me, as it does, another opportunity of meeting my old friends and college mates.

For the distinction and honor thus conferred upon me, an aberrant Canadian, I have just reason to be proud and let me assure you of my highest appreciation of it.

In selecting a subject for my discourse I had no supercilious notions of highly entertaining you, nor did I dream of assuming the role of teacher. I determined on "The Surgery of To-day," I know not why, but I did. Standing thus, between the past and future · between our inheritance, the surgery that has been done, and the work that lies before us to do—I hope you will bear with me, if I should deviate from the ever fleeting line of my subject and refer now to the one phase of it, and then speculate on the other.

Much of our surgery is empirical and not rational, and hence the opportunities for original research are great. That which has stood the test of time is retained; some of it, no doubt, will be perpetuated; while again, long cherished theories and practices must vanish in the light of new discoveries and inventions. I take it then that I have considerable license in selecting and in emphasizing what, in surgery, seems to me, to be of most importance.

In no time in medical history has surgery been as international in character as it is at present. In the processes of the development of the high grade of surgical efficiency that is now established, we find them teeming with instances of hardships in times of peace and war, of

* Address delivered at the Canadian Medical Association, London, August 25, 26, 27, 28.

examples of life sacrifices, daring deeds, unexcelled industry and charitable acts, the most altruistic to be found in any calling or profession, for

> "'Tis what the happy to the unhappy owe,
> For what man gives, the gods by him bestow."

The surgeons of generation after generation have been stimulated to emulation by the precepts and examples of the great surgeons of the preceding generation, and the sum total of their true labors we now cherish, practice and enjoy. The differentiation of the work done in various countries and the designation of it as being national, no longer pertains. We do not now recognize British, German, French, Italian, or other surgery as being different from one another, or from that of our own. An American gave anæsthesia to the world, not to America alone, and equally true it is that a Briton gave us practical antiseptic surgery, founded on the bacteriological researches of a great Frenchman. In looking over surgical literature it is noticeable that the surgeons who had played the most prominent parts in the evolution of our art and science had walked the hospitals in other countries, sat at the feet of masters, studied in foreign laboratories and conducted experiments of their own. A personal friendship was thus formed between the profession of one country and another, and the knowledge of one became the knowledge of all, until now reciprocity is complete.

The western men unhampered by the restraining influences of ancient customs and effete precedents have been, for some time, and are now more than ever, scattering scientific and practical seeds from the tree of knowledge that has been transplanted into our virgin soil, to all the world through innumerable channels, so much indeed as to command the attention and respect of the wise and noble men of the east. The increasing number of distinguished surgeons visiting us every year is complimentary. In addition to individual visitations of doctors from one country to another and conveying principles and practices to and fro, there are other professional avenues through which surgical knowledge finds its way to all nations. Chief among these are the publication of books, monographs and treatises; the issuance of journals; and the publications of transactions of special societies.

The influence of professional gatherings, from the smallest local society to the great national associations, with their surgical sections, reaches far and wide. Then comes the special surgical associations, international congresses and now an "International Surgical Association" is organized, by representative surgeons from each country, to work on special surgical lines. This reaches a plane in search of scientific truths that has never been attained before in the surgical world.

While surgical societies have their special value and place, there can never be any danger of their teaching causing a separation of labors of the physician and surgeon. So long as the internal organs of man become disordered and diseased they shall need medicine. It is an indisputable fact that the best results in surgery are obtained, not by a competitive struggle between the surgeon and physician, but by a graceful co-operation, one with the other for the benefit of the sufferer.

This is the result of education and culture. How different now from the time when in 1774, Von Wuthwehr of Freiburg suggested a union of surgery with medicine, the students threatening to mob him!

The surgical appliances, instruments, materials used, the aid to diagnosis, the technique of operations and the operations themselves are universally the same. The inventions and new discoveries of different individuals are eagerly published and heralded with lightening speed all the world over It is easy for me to go on with these glittering generalities, but that will not suffice for an occasion like this. So I shall now proceed to do my duty.

While aseptic precautions make it possible for us to expose and explore the brain, with comparative impunity, still, owing to its high and special organization, its feeble recuperative, reparative, or, if any, regenerative power, outside of raising depressed fragments of bone, compressing it, trying an artery and opening an abscess, the practical field is limited. The surgical treatment of most diseases of this organ is but seldom satisfactory. It is true that we perform craniotomies for the microcephalic, supply intra-cranial drainage for the hydrocephalic, and oftentimes benefit them, but I have yet to see an intelligent citizen develop from one of these subjects. What is needed for the more successful removal of brain tumors is an earlier diagnosis, more accurate localization, and probably better technique. Haemorrhage, so often causing death, in these operations, is no longer dreaded when we temporarily clamp the carotid arteries.

Reports of successful cases of the removal of brain tumors are becoming more and more frequent. Obscure disturbances of the brain, following severe injuries, such as mental cloudiness, irritation, stupor and persistent headache, are often relieved, when one, two, or more ounces of cerebro-spinal fluid are removed by lumbar puncture. The procedure is so simple and free from danger that it should be more generally employed for the relief of cerebral tension. As a means of diagnosis of injuries of the cerebro-spinal axis, it is not reliable. For the probable relief of epilepsy or insanity following trauma, the trephine is invariably applied The x-ray is a welcome aid in the diagnosis of obscure fractures, bone

depressions and for the detection of bullets or other foreign substances carried within the cranium. Division of the sensory root of the Gasserian ganglion has been found successful in the relief of tic douloureux. This operation may rival the removal of the ganglion.

When the source of irritation which produces the fit in "essential epilepsy" is clearly defined, surgical treatment may be found useful when carried out according to the nature of the disturbance. The present mass of evidence in literature is rather against operations in this disease.

The distressing aspects caused by facial palsy and facial contractions have found relief in anastomosis of the spinal accessery or hypoglossal to the facial nerve—a procedure recommended five years ago. It is based on well known physiological laws of repair, and supported by carefully conducted experiments. New plastic operations devised in the last few years for the early, and even late closure of cleft palate, give results vastly superior to the older methods. The earlier congenital defects of the palate and lips are repaired the better will be the speech. All defects should be closed before the child begins to talk. The temporary closure of the cartoid arteries is a distinct advance in preventing hemorrhage while operating on the head and neck. It is founded on clinical experience and sustained by experimental researches. Many have died from loss of blood, and from shock of even poisoning, caused by a prolonged anæsthesia in trying to check the hæmorrhage in such operations as the removal of the parotid gland, tongue, superior maxilla and post-nasal growths, when a simple temporary clamping of one or both carotids would have saved them and prevented that indescribable grief and anguish of relatives, sometimes worse than death itself. Not to ardently seek to know and utilize all we can of practical advances in surgery is nothing short of "man's inhumanity to man."

In regard to the thyroid gland, let me say that its behaviour in health and indisease is still an enigma. The disease affecting it and mysteriously disturbing the entire economy of the sufferer, some parts more prominently than others, that puzzles us most, is exopthalmic goiter. The problem of its pathogenesis is unsolved. How then can a rational surgical treatment be prescribed. If we wait for some theory to explain all its phenomena history will surely repeat itself. In our desperation from the almost invariable uselessness of internal medication, thyroidectomy and sympathectomy have been resorted to by surgeons and with considerable success. The present statistics giving 76 per cent. of cures, when the organ is removed, and 63.8 per cent. after bilateral extirpation of the cervical sympathetic nerves. I am apprehensive that these

excellent results will not be universally obtained. It is worthy of note that the mortality in thyroidectomy, mainly from croupous pneumonia, embolism of the sylvian artery, heart failure, and thyroid intoxication, is considerable, while that of the latter operation is practically nil.

Carcinoma is the most formidable and common surgical disease in the mammary region of the body. Let our radical operations for its extirpation be ever so extensive, we are never certain that it is entirely removed, nor can we positively tell whether lymphatic extension is near or far, even by the most careful microscopic examination of the gland and structures removed. Another grave uncertainty confronts us, that is an early dissemination of cancer to the internal organs sometimes occurs. This has always been a perplexing clinical problem, but the discovery of the haemolymph vessels has solved it satisfactorily, as they establish a free communication between the lymphatics and blood vessels. Through them, small particles of the carcinoma are taken up into the general circulation and then distributed to internal organs. In the face of evidence, from the most reliable sources, to the effect that cancer is rapidly on the increase, and in view of our sad clinical experience in dealing with it, except at a very early stage, it is high time that a cure be discovered, that will knock it out as the serum does with diphtheria. It is a misnomer to speak of cancer as returning after an operation. The fact is that its extirpation was not complete. The *en masse* removal of the breast, axillary fat, and lymphatics below the clavicle, with the sacrifice of a part, or the whole of both pectoral muscles, have been slowly but surely accepted by surgeons as the proper thing to do in all cases of cancer of the breast. In order to obtain better results, we must go still farther, and remove the supra-clavicular and mediastinal glands in at least some of the cases, as is now carried out by only a few men. In comparatively young and otherwise healthy women, the practice of first attacking the mediastinal and cervical glands, whether palpable or not, and at a second operation remove the infra-clavicular and axillary lymphatics, along with the breast, is commendable, safe and successful. Inoperable cases of breast cancer present themselves before, and also after, operations have been performed. For the treatment of these, the much abused x-ray is a favorite remedy, but assuredly most disappointing except in skin involvement alone. Oophorectomy is on trial for these same inoperable subjects. Interscapulo-thoracic amputation, and amputation through the shoulder joint have been performed to relieve the patient of the swollen, useless, and painful arm, which may follow a radical operation for mammary carcinoma.

There have been a series of successive triumphs in attacking wounds of the main organ of our circulation, the heart, the pericardium being bodly opened and that vital organ sutured. End to end anastomosis of the popliteal, brachial and femoral arteries has been successfully executed, and the management of wounds of the large veins easily carried out. The surgery of the lungs offers a field for future mark, and what has been already accomplished, although not of the most satisfactory character, is encouraging. Visceral pleurectomy or decortication of the lung for chronic empyema is the last practicable procedure to be recommended, after drainage, re-section of ribs, and thoracoplasty have failed to effect a cure. This operation, to my own observation, has saved several lives.

Since I entered upon the study of medicine, twenty-six years ago a retrospect of the advances in surgery would be simply bewildering My vivid recollections of septic gangrene, sloughing phagedæna, flaming erysipelas, pyemia and septicemia are still clear, and this, too, was at a time when antisepsis had gained considerable acceptance.

I shall never forget the first operation of a major character I witnessed. It was amputation near the hip joint, and the patient practically died on the table. The scene is now before me. The crowded amphitheatre; the active arena; the mist of carbolic acid spray, half obscuring the patient, operator, assistants, nurses and honored guests; the smell of ether; the outstretched sleeping patient; the glittering instruments in 1 in 20 carbolic; the new white gown on the surgeon, now introduced for the first time; the winding of an elastic cord about the hip and body of the patient; the long amputating knife, twice traversing the limb obliquely; the hot room and pale freshmen; the profuse bleeding and quivering flesh; some of the boys walking out, perspiring freely; the severance of the bone, by a live electro-cautery wire, then being on trial, and the long time it took; the cold shivers; the clamping of arteries and veins; the twisting of the femoral artery eight times between two forceps, and torsion of other vessels; the sea sponges soaked in hot water and, with a forceps, placed between the flaps for a few minutes, controlling capillary oozing; the boys yet pale, collars wilted and handkerchiefs soaked; then the active spray apparatus giving out, and then a clearer view of blood-stained men, women and things generally; more boys walking out; the sewing of the stump with silk, rubber tube inserted and dressed with twelve layers of carbolated gauze; the operation completed; seeing stars; the patient's last breaths—death rattles; and finally came the announcement from the surgeon: "There will be no more operations this day,"—a great relief to all.

This bloody and fatal operation was a solar plexus blow to most of us freshman. I can always describe it.

It would be invidious to compare the surgeons of that time, but those of them still alive no longer see deaths from hæmorrhage in amputations at or near the hip joint, nor the frequent loss of life from infection following clean operations. I have described the amputation of a quarter of a century ago to infer a comparison between then and now, which I need not draw to an end, but just think of two things in this connection,—the bloodless major amputations and exceedingly low mortality of to-day.

In the saving of limb and life in diseases of the extremities many improvements are now in use as compared with even a few years ago. Take, for instance, in bony ankylosis of the large joints—the hip, knee and elbow. Instead of the old sweeping excisions, a curtain of muscle or fascia is carefully fixed between the ends of the bones after a minimum amount of resection is done, which not only prevents a reunion of the bones, not interfering with the longitudinal growth of the bones in children, but also furnishes an excellent false joint. The bloodless operation for congenital dislocation at the hip joint is a welcomed advance in orthopedic surgery. It is that over which America has recently been thrown into hysterics. The open operation that shall cure the cases not amendable to the bloodless method is not yet invented. Time does not permit me to speak of the many other valuable advances that have been made in the surgery of the extremities.

In pre-antiseptic days, the surgery of the abdomen, including hernia, was far behind that of the extremities, for reasons that are quite clear to us now, but since we have learned to invade the peritoneum without causing inflammation of it, the advancement of abdominal surgery has far outstripped that of any region of the body. On account of the great frequency of hernia, and the proneness to strangulation, operations for its cure by the open method became established. A young person to-day is not advised to wear a truss if he is otherwise healthy. An operation is performed, and he is cured. Any operation for the cure of oblique inguinal hernia that does not take into consideration the various local causes and proper relationship of structures should be discarded. Empirical procedures include all the operations or combinations of them devised, in which the cord is raised out of its bed. By following these, the science of surgery loses its charm in the search of truth, and the art its beauty. The only true surgical operation yet produced for the radical cure of oblique inguinal hernia is the typical operation, because it counteracts the local congenital defects, sutures the structures where they

normally belong, and cures the affection. It is the simplest, because it is based on an accurate knowledge of the anatomical defects in this region. We now know that the presence of a large infundibular process, a non-closure of the funicular process, and increased intra-abdominal pressure are not all the main causes of hernia. In order to verify what I have said, let any surgeon raise a semilunar flap of skin, fat and both layers at superficial fascia, slit up the aponeurosis of the external oblique and carefully measure the origin of the internal oblique muscle from Poupart's ligament, and he will find that its origin is deficient more or less in almost all cases of oblique inguinal hernia. In some instances the muscle has no attachment at all to Poupart's ligament, therefore the hernial protrusion has a sausage-shaped appearance, and bulges the skin, nearly the entire length of Poupart's band. In a normal inguinal region the internal oblique muscle comes down and completely covers and ably protects the internal ring. Let us not forget that this muscle is the only muscular structure in this region, and is also the most powerful.

If it is not in its proper position, how can it protect the internal ring during active intra-abdominal pressure, as in lifting, jumping, etc.?

Remove the sac, suture the internal oblique to the inner aspect of Poupart's ligament, down two-thirds of its length at least, and at the same time pick up the slack in the transversalis fascia with the same sutures, thus fitting it around the root of the cord, so as to make a new internal ring. Now sew the aponeurosis of the external oblique, coapt the skin, and the operation is completed. The cord is not disturbed, nor the testicle endangered. The results are better than by any other method, and this statement can be supported by the reports of several operators in over a thousand cases in all.

The history of abdominal surgery reads like a novel. Injuries and diseases of the structures and organs, within and near this cavity, furnish abundant material for several specialties. There is the special abdominal surgeon, who incidentally repairs the perineum, the gastrologist and enterologist, the gynaecologist, proctologist, a genito-urinary specialist, and others, but the general surgeon claims all, and may be looked upon as a balance wheel in this line of work.

The liver, the largest organ in the body, on account of its friable, vascular structure, and its bile-secreting function, was dreaded by the surgeon till of recent years. It may be reached through the abdominal or thoracic walls, and hepatotomy performed for abscess, hydatid cysts, or cholemia. We do not hesitate to remove benign and malignant tumors from it, when not too extensive. The mortality from partial hepatectomy is not more than 12 per cent. The bleeding is not difficult

to control, as one at first sight would think. Ascites due to cirrhosis of the liver is now cleared away through a collateral circulation, established by stitching the omentum to the abdominal wall or spleen.

It is only thirty-five years, 1867, since the first cholecystotomy was performed for gall stones; and seventeen years, 1886, since the relation of typhoid fever to cholelithiasis was first pointed out. That bacterial infection is the cause of gall stones is now accepted. Early gall bladder surgery is easy and safe. While late operations, where complications have arisen, are difficult, and dangerous. The irritation of gall stones is surely an etiologic factor in cancer of the gall bladder. Cholecystotomy has the widest range of usefulness. Cholecystectomy, commonly performed, is an operation that should be seldom indicated, if the attending physicians only realized the importance of early surgical treatment.

The symptoms and signs of active cholelithiasis are sometimes obscure, but usually they are so clear as to make a diagnosis easy. It is much wiser to face one per cent. mortality in immediate, than about ten times that risk in remote, operation. The conditions when the gall bladder should be removed are pretty well defined. It is the operation of choice in (a) complete stricture of the cystic duct, (b) thickened contracted gall bladder, already almost obliterated by inflammation, (c) septic gangrenous condition, (d) hydrops, and (e) in cancer.

Choledochotomy, like cholecystectomy, is an operation of necessity in neglected cholelithiasis. When it is performed and the stones removed from the common or hepatic duct, hepatic drainage is most likely indicated, whether the gall bladder and cystic duct are removed or not, for additional calculi may come away later. It is not necessary to suture the common duct.

I fail to see the necessity of long transverse or oblique incisions of the obdominal wall in order to expose the gall bladder and ducts. Unless the operator is clumsy, and inexperienced, or has large hands, the vertical incision to manage the gall bladder, and a curve inwards and upwards towards the ensiform cartilage when the stone or stones are in the common duct, is all sufficient.

The surgery of the pancreas, spleen and kidneys has enjoyed a new and substantial impetus the last few years. Acute and chronic pancreatitis have come under the knife, and a calculus has been diagnosed and removed from the pancreatic duct, the patient making a good recovery. The surgical treatment of chronic nephritis is quite beyond the experimental stage. Decortication of the kidney is an easy and safe operation, and although we cannot as yet definitely account for the

marvelous benefits that immediately accrue, two things prominently suggest themselves as a probable explanation, namely, the relief of tension, and the establishment of collateral circulation; and, too, the great determination of blood to the kidney after such a procedure must have a renovating effect upon it. Nephrectomy, nephrotomy and suspension of a floating kidney are established operations. Partial removal of a kidney is sometimes advisable in traumatism, or when a malignant growth is being extirpated and, in many conditions, where a circumscribed portion of kidney is involved.

Nephro-ureterostomy will, I am sure, be found indicated and successfully performed.

Ureteral anastomosis and uretero-cystotomy, although difficult in their execution, are very successful procedures. The task of removing impacted stones from the pelvic portion of the ureter is no longer considered insurmountable. The most reliable means of locating a stone in the genito-urinary track is by the x-rays. Transplantation of the ureter into bowel is an immediate successful operation, but ascending inflammation to the kidneys almost invariably follows, marring its usefulness

In a system of surgery, published in 1866, the removal of the prostate is referred to in the following words: "Excision of the prostate has been recommended. It does not, however, appear that anyone has really ever had the hardihood or folly to perform it Excision of the middle lobe would be less objectionable."

The experience of the last four years has placed both suprapubic and perineal prostatectomy as being feasible, practicable, and the safest and best treatment for prostatic hypertrophy, with a preference, in America, for the perineal route. The mortality is lower than that of any other major operation on the aged, even men over eighty years surviving it and enjoying life without the annoyance, or agonies, accompanying obstruction to the free flow of urine. If no other advancement in surgery were made, the last decade, except this one, offering, as it does, relief to at least one-third of the male population over sixty years of age, surgeons could well hold up their heads with pride. The dangers of the catheter, aspirator, trocar and bougie are only too sadly known to need mention here. Another instrument that has been put to a practical test, and found wanting is the electro-cautery knife. It is a dangerous and clumsy affair, and only a small percentage of cases are at all benefited. Its use should be limited to (a) pathologic bar, (b) fibrous vesical orifice, and (c) sessile middle lobe, still quite small; and these conditions are more amenable to a perineal section, and with less risk to

life. A genito urinary specialist can use the electro-cautery knife, but it takes a surgeon to remove a part or the whole of the prostate. The most difficult prostatectomies are in those cases that have been burnt, and only partially, or not at all, benefited.

The median perineal incision is the most surgical, as fewer structures are injured, and it furnishes the only proper route for drainage. Transverse cuts, semilunar curves, the Y-shaped and the inverted ⊥-shaped incisions, or modifications of them, are all right for the mediocre, but not for the expert, operator. Through a median cut of the perineum, and the membranous and a portion of the prostatic urethra, an educated finger feels what the exact obstruction is, without and within the bladder. It is the best prostatic depressor, enucleator and guide to the passage of the prostatectomy forceps, but oftentimes even he, who boasts of being long-fingered, fails to reach the parts desired, and has to resort to such aids as depressors, tractors, retractors and hooks, in order to see as well as feel what is being done. The exposure of the prostate, through a median incision, with proper retractors, is simple, complete, and beautiful. The removal of the lateral lobes first, with the aim of not injuring the ejaculatory ducts, facilitates a safe entrance into the bladder with the finger, depressor, or prostatome to deal with the middle lobe, which should be dragged into the perineum through the vesico-prostatic urethra. This is a subject I should like to dwell upon, and relate to you the story of the most gratifying experiences and brilliant results in surgery, but I must forbear.

While abdominal surgery began with ovariotomy, nearly one hundred years ago, owing to the high rate of mortality in those pre-antiseptic days, only the boldest and most enthusiastic men opened the abdomen at all. Up to 1870, the mortality was fearful when the abdomen was opened for any cause whatever. In some of the general hospitals, nearly every case of ovariotomy promptly died. From 1870 to 1885, the mortality rapidly decreased from over 80 per cent. to 4, 3, 2, 1, 0 per cent., in exact proportion to the knowledge gained of antisepsis and asepsis, as well as to that of improvements in the technique of operations. It is a rare accident at the present time for a women to die from the removal of an ovarian cyst or tumor. The rapid strides of abdominal surgery are revealed in the history of the glorious victories over injuries and diseases within the belly wall, in lessening suffering and saving life. Small and well equipped hospitals have sprung up throughout the land, like so many life-saving stations, vigilantly watching to save a sufferer on a boisterous and ruthless sea of trouble, and in despair. It may be injuries of all kinds that demand prompt attention by the local surgeon:

a daughter bleeding to death from gastric ulcer, a strangulated hernia, acute bowel obstruction, urinary obstruction, rupture of the bladder, perforating typhoid or other ulcers, extra-uterine pregnancy, and many other conditions too tedious to mention, but we must not forget acute inflammation of that small anatomical vestige, the vermiform appendix, that has probably caused more acute suffering and deaths than that of all abdominal organs combined. Appendicitis may well be looked upon, from a surgical standpoint, as an accident that needs a prompt operation, except in its very mildest forms, when delay may be safe for a convenient day and hour for the appendectomy. One may suffer with gall stone colic and jaundice for weeks, months and years, from renal colic for days and weeks, but from appendicular colic and pain only for hours, without imminent danger to life.

The indications for a gastro-enterostomy are in advance of any one method that can be pointed out as superior to the many practised. Bone plates and bobbins have had their day, but the anastomosis button is still in active competition with the needle and thread. The elastic ligature is the quickest, easiest and safest in its application, and experimental clinical evidences are so convincing that it is sufficiently prompt and thoroughly reliable in establishing an anastomosis between the stomach and the intestine.

In establishing end to end intestinal union, the anastomosis button has the advantage that it can be used where sewing cannot be done, and it is quickly inserted. It is not necessary to mention the objections to it, but be they what they may, the button is a good thing to have along when emergently called upon to treat intestinal obstruction. Of all the methods of suturing devised, some thirty-six in all, that which is intra-intestinal has recently gained most favor, and preferably by continuous to the interrupted suture. With a little practice it can be as rapidly applied as the extra-intestinal suture. A new procedure, known as "The Single Cuff Method of Circular Enterorrhaphy" has been devised. It is founded on extensive experimentation on dogs, and has been used twice on man. The treatment of carcinoma of the rectum, except that near the anus, has recently undergone a complete change. The abdominal route is eagerly accepted as more satisfactory and safer than the resection of the coccyx and a portion of the sacrum to reach it from below.

More conservative efforts are being put forth in young women, in the surgery of the uterus, tubes and ovaries. Myomectomies instead of hysterectomies; bisection of ovaries and removal of the pathological portion, instead of oophorectomies; and salpingostomy and hystero-salpingostomy instead of salpingectomy, are praiseworthy and sufficient.

The radical treatment of cancer of the uterus through the abdomen, with the removal of the lymphatic glands, is, as it should be, gaining favor. Adbominal and pelvic surgery has been greatly facilitated and mortality lowered by the introduction of raising the pelvis high above the rest of the body, thus enabling the operator to see what he was doing. Intravenous and hypodermic introduction of normal salt solution at the temperature of 115° to 120° F. has saved many a life.

While the surgery of to-day is marvelously in advance of what it was even ten years ago, we must not delude ourselves that there is nothing more to be discovered, invented or improved upon. The teaching of surgery must be revolutionized. The manual training of the medical man has been and is woefully neglected. Practical surgery on the cadaver does not teach a student how to seize and tie an artery, set a fracture, sew a wounded bowel, etc. All this should, in justice to suffering humanity, at once become a part of the curriculum of studies.

Judging from the signs of the times, the surgery of the future will have a more limited sphere than at present. The discovery of a cure for only two monster human destroyers—cancer and tuberculosis—now contributing largely to keep surgeons busy, would greatly lessen the number of operations. We shall hail the day when laboratory workers will find something that will cool off all forms of inflammation in their incipient stages. It may not be a Utopian dream that in the near future we can buy antihæmorrhagins, furnish an antidote to any kind of ptomain before blood destruction and death has come, secure anti-iso and anti-hetero-nephrolysins for interstitial nephritis, and furnish a serum that will shield us from the "horror autotoxicus" or self-poisoning. It has been recently said by one of America's most profound pathologists that "looking at it broadly, the corner stone of modern pathology is toxicology."

> "Give us but knowledge, though by slow degrees,
> And blend our toil with moments bright as these,
> Let Friendship's accents cheer our doubtful way,
> And Love's pure planet lend its guiding ray—
> Our tardy Art shall wear an angel's wings
> And life shall lengthen with the joy it brings!"

In conclusion let me thank you for the patient hearing you have given me.

10 Drexel Sq. Chicago, Ill.

THE LYMPH CIRCULATION IN MODERN MEDICINE.*

By H. A. McCALLUM, M.D., M.R.C.P., LONDON,
Associate Professor of Clinical Medicine, Western University London, Canada.

OWING to the illness of Dr. James Stewart, the address in Medicine was pressed upon me by your President and Programme Committee. In reluctantly accepting the honor, I recognized not only the short interval for preparation, but my inability to give such a popular address as the occasion calls for. Relying on your charity to-day, I accepted the investment of this office, not as an honor, but as a duty.

On account of the time left, I must of necessity select a subject with which I have already been familiar. In announcing it as "The Lymph Circulation in Modern Medicine," one feels that we are treading upon a new continent of thought. It is a subject tha s in intimate relation with every branch of medicine and surgery. The unsolved problems of physiology, pathology and therapeutics must find their final solution here.

The final contributions in these three realms must be cytological, viz., by painstaking study of the cellular elements. As cells, of their own vital activity, feed and oxidize themselves from the adjacent lymph stream, it must be basic to every problem in medicine how lymph is kept nutritious, and how it rids itself of its waste products. The tissue juice, or lymph, is not only the food of cells, but their sewerage system as well.

Two hundred and fifty years ago, Rudheck discovered the general lymphatics, and gave the first conception of the irrigation theory of tissue nutrition. Hunter believed in the theory of tissue nutrition: Johannes Müller ascribed lymph to the vital activities of the living cells of the body —Elements of Physiology, Baly's trans. Vol. 1, P. 248.

In 1850, Ludwig propounded the theory, which bears his name, that lymph was renewed by filtration and osmosis. Twelve years ago, R. Heidenhain startled the physiological world with experimental evidence, which he claimed was fatal to Ludwig's theory. He experimented with certain substances, which altered in quantity or quality the lymph coming from the thoracic duct. These he called lymphagogues A great deal of physiological work has been done in the last twelve years in this department, and a considerable number of physiological authorities have fallen away from Ludwig's school, although not fully accepting Heidenhain's theory of endothelial secretion from the capillary wall. The champions of Ludwig have been put to their wits' end in squaring the laboratory evidence with filtration, osmosis, and diffusion.

*The Address in Medicine at the Canadian Medical Association, August 25 to 28.

Before touching upon the contested theories, let us have a glance at the modern anatomy of the lymphatic system. Budge—Arch. of Anat. and Phys. anat. abthg. 1880 and 1887—thought there were two lymphatic systems. One of these disappeared in development. Ranvier, W. G. McCallum, Sala and Florence R. Sabine have separately arrived at the conclusion that the lymphatic system is a modification of the circulatory system, that is grown by budding backward from the subclavian vein, and gradually invades the tissues and organs, that these buds are closed or blind at their terminals, and have no physical connection with tissue spaces. Ranvier looked upon the lymphatic system as a great gland, the blind, protruding capillaries, as the secretory parts, while the ducts were the excretory canals. These lymphatic capillaries are lined by endothelial tissue. The termination of the lymphatic tissue, as the lacteal of the intestinal villus, is a fair sample of its method of termination in other tissues. There are tissues, like cartilage and the cornea, which are never invaded by lymphatic capillaries. The lymphatic glands seem to be an afterthought in development, as they are absent till we reach birds and mammals.

These anatomical and embryological studies bring us face to face with this: that we have included as one system the tissue juices and the lymphatics, when in reality they are separate. The tissue spaces and their juices are not part of the lymphatic system. The fact that we have been considering two fluid systems as one demands strong confirmatory testimony of an evolutional, pathological, and clinical character to be weighed with laboratory evidence in reaching a working hypothesis on this circulation.

The amount of lymph in the human body is difficult of estimation. Waller—*Human Physiology*, Edition 1893, p 116—approximately estimated it to equal three or four times that of the blood. This estimate is probably too high, but the quantity of this fluid shows its marvelous importance. Florence R. Sabine, when suggesting the function of the true lymphatic system to be a system of absorbents, gives evidence obtained from a "specimen of twins prematurely born, one of which was normal, while the other was so œdematous that it was simply a round ball." Examination of the œdematous one showed no trace of a thoracic duct, nor lymph glands.—*American Journal of Anatomy*, May 26, 1902.

The tissue juice circulation I shall call the lymph, and the other the lymphatic. As the lymphatic is one of the forces in the lymph circulation, there will be no attempt made here to divorce them. Are we in possession of sufficient data to indicate the method by which the lymph passes over from the blood stream to the lymph circulation as a secretion

a filtration, or a product extracted or sucked out by the vital activity of the tissues themselves?

If the field of enquiry be extended to embrace facts from evolutional, embryological, physiological, pathological and clinical sources, the answer to the first question can reasonably be affirmed. The second question points to lymph as an independent circulation, and its forces are the vital activity of the tissues. It would follow that the lymph itself was an extraction product from the blood stream The extraction process may have some of the characters of secretion and filtration. It is not to be denied that the physical laws of the liquid act in the body, but their scope in the lymph circulation is overshadowed by the selective action arising out of the vital activities of the tissues.

The thing that most concerns us is that the lymph circulation is an independent one.

Lymph will flow from the thoracic duct in some cases as long as four hours after the death of the animal. Ludwig long ago discovered that ligation of this duct was followed by rupture of it behind the point of ligature.

Harly's experiments—*British Med. Journal*, Aug 20, 1892—on the production of Jaundice in dogs, showed that when he ligated the hepatic lymph ducts and the biliary ducts simultaneously, that there was great danger of rupture of one of them These experiments were conducted to show that bile gained entrance alone by way of lymphatic circulation, but they also show an unsuspected power behind this primeval circulation.

There is evidently as many calculatory forces as there are tissues, each tissue possessing a method of its own in the selection of lymph. Easily understood examples of this may be seen in the vitreous humor of the eye, cartilage, bone, voluntary and involuntary muscles, epidermis, and hair. Their peculiarities will be discussed again at some length.

In addition to the ability of this circulation to continue for hours after cardio-vascular death and independently of the latter forces, we see it to be the sole circulation in the vegetable kingdom, and the mighty trees of the forest are the evidence of its powers. It is the sole circulation in the lowest forms of animal life, and executes oxidation, excretion, secretion, vital movement reproduction and repair. It is the sole circulation in the early weeks of embryonic life of all individuals, promoting purposeful growth, building and scaffolding and laying down the framework of our human system.

Without question, the lymph circulation existed long before the cardio-vascular, and was in possession of independent forces and func-

tions. Can it be possible that this ancient circulation, which called into being the cardio-vascular system, would lose in the new comer its own identity and independence? Or was the cardio-vascular system secured for greater importation and exportation facilities?

The studies of Dr. A. B. Macallum on the inorganic composition of certain sea forms and sea water show that the formers' degrees of salinity can only be explained on the ground that the cells lining their gastro-vascular channels and the covering cells have a vital selective action. Speaking of the inorganic composition of blood plasma and its strong resemblance to ancient sea water the author says: "These can hardly be mere coincidences, and they seem to indicate that the proportion in plasma are an ancestral feature derived from a form which had its habitat in the ocean in the earlier geological periods when the ocean water was very much less rich in salts of magnesia than it is now Just as in the medusæ of to-day, the gastro-vascular fluid is but sea water, so in the ancient oceanic prototypes of the vertebrates and of invertebrates which are provided with a distinct circulatory system, the fluid in their vascular channels which communicated with the exterior was probably but modified sea water as regards its inorganic constituents, and in the long period of time during which the forms were exposed to the conditions of such an environment a physiological relation between the tissues and the salts in their vascular fluids in the proportions occuring in their environment, became so fixed and established that it was of necessity transmitted to the descendant forms living in different habitats, whether on land or in fresh water." *Journal Physics*, vol. xxix, No. 3, page 254.

By the blood stream, oxygen and nutrition are carried to the tissues and waste products are carried away. If we knew how oxygen was utilized by the tissues, it would give us "scientific anticipation" of the modus operandi of the other functions of the lymph circulation.

The history of the physiological teaching of oxidation is interesting. The ancient belief that the arteries contained air and carried it to the tissues was abandoned after Harvey, and in its place came the teaching that the lungs were two furnaces burning up the waste products carried to them. Then followed the teaching that the blood oxidized the tissues through the walls of the systemic capillaries. This was replaced by the teaching that blood oxidized the perivascular lymph, and the tissues became oxidized by contact. The present day teaching is that cells oxidize themselves by their own inherent vital activity By their own instinct they seize the oxygen in the lymph and cast back their products of metabolism, viz, products of secretion and excretion.

Internal secretion and excretion are cast from the lymph stream to the blood stream simultaneously. The giving up of lymph by the way of the thoracic duct is a very remote and fractional part of the interchange—Tscherwkow *Arch. F.D. Ges. Physiol.* 1895, Bd. Ch. 12 S. 391. Lazarus Barlow and Starling, *Journal Physio.* Vol. 16. The interchange is almost entirely effective between the lymph spaces and blood capillaries. It has been found that when an animal is being bled the later portions of blood are more diluted than the first and this is the case whether the thoracic duct is lighted or not.

Experimentally, we know that from the hind limbs of an animal at rest no lymph flows. By kneading the muscles, a free flow can be induced. Passive or active movements of the limbs bring about a free flow. It is known that in the quiescent state the lymph, coming from the thoracic duct, is from the viscera.

Glandular or muscular activity takes front rank as increasers of lymph flow.

In harmony with the post mortem flow of lymph, examination of the web of a frog's foot after the heart has been cut away or the vessels clamped, movement in the blood capillaries will continue from five to fifteen minutes thereafter; when all movement has ceased, it will return if some irritant be applied to the web.

It seems that the lymph circulation, being more ancientand stable, continues after cardio-vascular death. A student whose mental make up enables him to see the other side of things, said in my quiz class that "Blood was simply mixed lymph with peculiar cells floating in it." Whatever we find in the serum we know has been cast there by the lymph.

A study of the blood serum is practically a study of general lymph. All the modern studies of serum will apply to the lymph. The causes of vital movement must be analyzed before we gain a clear view of lymph circulation. Evolutionally, this principle must be true, that all protoplasm not undergoing vital movement in offensive or non-nutritive media must have been lost in the evolutionary process. This must be the basic explanation of all vital movement. By vital movement is meant not only contraction, but intervening relaxations.

The contraction of voluntary muscle is a powerful expulsion force on lymph within its sheath. Now, before a voluntary muscle contracts, there is a carbohydrate explosion giving rise to carbonic acid, sarcolactic acid etc. This takes place in the latent period before the visible contraction, and changes the reaction of the muscle from alkaline to an acid reaction. The contraction which follows on this expels large

quantities of lymph. Here, clearly, vital movement was inaugurated by offensive lymph, and the purpose was to expel it.

Now, the great stimulus to involuntary muscle-movement is venous blood, namely, offensive lymph—is the stimulus. The meaning of vital movements, *Canadian Practitioner*, October, 1902.

It is interesting to note the wide distribution of involuntary muscle. We find it composing largely the walls of hollow viscera. It is fully distributed in the stroma and capsules of glands and organs. And I would venture to say that more than one-half of the involuntary muscle of the human body would be found to be in the immense area of the skin. Its slow rhythmic contractions with intervening relaxation suggest a tardily beating heart. The attachment of the arrector pili muscle to the root sheath of the hair in such a way as to pump nutritive lymph into the hair shaft and the action of the ciliary muscle on the canal of Schlemm are two examples of this involuntary muscle acting as lymph pumps without doing so directly.

This variety of muscle has a tendency to have associated with it in this action white fibrous and yellow elastic tissue. In the lungs, the lymph circulation is almost wholly effected by voluntary muscle, during inspiration producing a vacuum in the chest cavity which favors lymph entrance into the lymph spaces and reservoirs. The expiratory effort, effected in natural breathing almost entirely by the elastic recoil, would act as a pump to expel.

I have said enough to show how varied are the ways in which the forces act. Vital movement is best seen in muscular tissue, but is not peculiar to it, as doubtless all tissue is capable of some degree of vital movement. Vital movement does not always take away from the form of contraction and dilute offending lymph.

The lymphatic glands, spleen, uterus, intestines, ureter and bladder undergo variations in volume, rhythmically due to their involuntary muscle, and this will continue even when removed from the body. The rhythmic flushings of transparent parts—(albinorabbit's ear or bat's wing) and periodic variations in volume of one's arm (when in a plethysmograph) are explained as arising from this smooth muscle tissue. Traube-Herring blood pressure, curves seen in states of asphyxia are similarly induced. We have the same rhythmic contraction of the walls of the lymphatic duct, and the intestinal lacteal is emptied by this tissue.

Offensive lymph inaugurate the respiratory and cardiac movements. Note how both will speed in state of asphyxia. A piece of steel em bedded in the cornea has long taught us that this nonvascular structure

can vascularize itself. This can only be explained on the theory that the tissues effected this by suction Inflammation under such a view of lymph circulation would be simply excessive selection or extraction of fluid cells from the blood. In states of asphyxia, the lymph coming from the thoracic duct is often bloody, an effect to be expected if the tissues secured their own lymph.

Now, what does one mean by offensive lymph ? Lymph may be offensive in being devoid of oxygen and nutrition, or containing metabolic and chemical products. High or low temperature would be offensive (to warm blooded animals), or high or low pressure, vibrations and certain electrical variations. It is one's right to question why, as often as how ? Adaptation of pathological process is an axiom of pathology, but there are countless examples in physiology. The adjustment of the iris to varying degrees of light is one of these. Here we see involuntary muscle adapted to expel offensive lymph. Heidenhain gave two divisions of lamphagogues, those increasing the water and those increasing the solids. I need not burden you here with details, except to say that certain salts like magnesium sulphate are powerful lymphagogues. This agent acts first as a lymphagogue, and secondly as a purgative. It is well that internal excretion should precede external excretion.

The lymph passing over to the blood stream contains defensive fluids, as well as waste products. Hence purging within certain limits may be a form of serum therapeutics (see excretion in the treatment of acute infections, *Philadelphia Med. Journal*, Jan. 13, 1900.)

The action of the secretions of the ductless glands have not been brought into this discussion, but they vitally act on the tissues, and, consequently, on this circulation. The two most powerful agents in interchange of lymph are the muscular systems. The voluntary expel lymph from their own body, and their sheaths, tendons and attachments, and place, as far as the limbs are concerned, this circulation almost wholly under control of the will. The influence of the brain over the movements of the involuntary muscles is less than over the voluntary. The emotions can play upon this circulation almost past belief in some individuals.

To consider the skin as a system of external drains is to consider it not an important organ. Its enormous amount of involuntary muscular tissue, the ability to corrugate itself to resemble "goose skin" in states of chill and fever, mxœdema and dermographia from strong or weak strokes to its surface, and the experimental evidence that stimulation of the pilomotor nerves, causes contraction in the skin, especially over the genital region (Langley and Anderson, *Journal Physio.* Vol. 20, ph. 85)

will justify one in speaking of the skin as a great lymph heart. The skin's elasticity alone would make it that. One can scarcely separate the lymph heart action of the skin from some of its several other functions, it being a sensory surface upon which are inaugurated impulses of pressure, temperature, pain, etc., which in turn set up reflexes of various kinds that keep the body adapted to its environments. If the skin be considered the external body world, it arouses, defends, and stimulates the inner mechanism more than can easily be conceived.

In order that I may not be charged with running thoughts till they are out of breath, I may bring forth Head's conclusions (*Brain, London* 1893, Vol. 16, p. 129) that each viscus had a definite segment of skin that would show sympathetic pain when the former was irritated. He assumed that impulses can reflex the other way, namely, that irritation of the skin over those areas would have trophic influences on the corresponding viscus. The so-called "Lung reflex" described by Abrams, *New York Medical Journal*, Jan. 13th, 1900, shows that this is true. By irritating the skin over the lung by means of cold, friction, or farradic currents, dilatation of the lung ensues and an increase of the blood in that lung follows.

This is evident by obliteration of apex beat, cardiac and splenic dullness, along with the appearance of hyperresonance or percussion, and a more definite lung outlining under x-rays.

Whether intraspinal or intraganglionic, excitement inside is communicated to the skin outside, and vice versa. Beneath the skin both superficially and deep are great laboratories that can be aroused to feverish activity by a stimulus applied upon the cutaneous surface.

By contraction of this great lymph heart, interchange of lymph and blood is effected, and the lymph passing over is a mixture of excretion and secretion, waste products and proteids, to defend the whole organism. It appears that the outer world excitement is accompanied by increased activity inside, else we had never been in possession of a heat regulating mechanism.

You well know the nervous mother who will make a hot-house plant of her child. There comes a day of exposure, and the child has "caught cold"—has bronchitis, pneumonia, nephritis or gastro-intestinal catarrh. The modus operandi of "catching cold" is this: The lymph stagnates for want of proper skin stimulus which would be cold—the application of cold to the skin produces a powerful interchange, driving the excreting organs to over work.

Over stimulation from clinical evidence we know can end in inflammation.

The child who has daily exposures has his waste products sent into the blood circulation in dosage. The daily exposure is itself a tissue arouser and tonic.

No biological worker now-a-days denies organic evolution but for the reason that the "How" entirely dominates the "Why?" it has not been pushed into the explanations of purposeful phenomena.

From the inception there were certain forces that act pon organic growth and will continue to act for all time.

Shall we ever know the full meaning of "Sunlight" giving us light and darkness; air with its varying shades of dissipation of heat from objects; and the medium of vibrations; the changing seasons with their variations of heat and cold; the cold and warm rains cleansing the air, plants and animals, and furnishing fluid for internal use of all? What a cluster of blessings. Try them on a human organism, and everyone plays on its cutaneous surface. Without the sunlight we had no eyesight—without vibration in the air we had no hearing - without the whole group we had not our cutaneous sensations.

In the open air, sunlight, and forced feeding treatment of phthisis, we go back to primal forces of organic evolution and we have staggered upon them, not by intelligent grasp, but by accident. Have we conceived the full range of possibility of the skin as an inaugurator of impulses, and movements, and the uses of these in maintaining normal health and in treating disease? We use in typhoid fever the cold bath and secure rhythmic discharge in dosage of the harmful toxine and of defensive proteids into the blood circulation. In typhoid fever the height of the temperature is merely the indication, the reduction merely the accident of treatment. We use massage to remove stagnant lymph in conditions of neurasthenia, melancholia, Glenard's disease and other forms of mal-nutrition.

The relation of the modern treatment of tuberculosis to the lymph system is easily indicated. The forced feeding enables the cells' inherent activity to obtain the material for the formation of the defensive proteids. The sunlight and fresh air stimulates the skin not hourly, but almost continuously to activity, that defensive proteids may constantly flow into the blood stream to enable the long drawn out battle to be won on the side of life. Stagnation of lymph can occur both in warmth and cold. This is overcome in typhoid tubbing by friction.

If one concede so much to the skin as an inauguration of defensive processes, what shall we concede to the great master tissue, the central nervous system in this regard! The influence of mind on the body has not yet attained its full recognition in medicine. The invigorating effect

of sane courage in arousing the whole bodily forces is a medical axiom from the beginning of time.

> "Know then, whatever cheerful and serene
> Supports the mind, supports the body too.
> Hence the most vital movement mortals feel
> Is hope—the balm and life blood of the soul."

The splendid practice of training the sick mind is far too little used. The neurotic should be taught to cease complaining, to minimize his actual objective symptoms and to train his body and mind to gradually increasing periods of alertness as well as periods of absolute repose.

Had this been more generally done by the profession there had not arisen in the land a cult who appeal to the mystical to heal disease.

I shall not stay to discuss the relation exercise, inflammation, hypertrophy, atrophy and repair bear to this hypothesis.

You will doubtless see that our attention must be fixed on cells, and the best method of securing their fitness to fight morbid changes. Chemistry and physics give many phenomena a meaning, adaptive to our *understanding; yet there are innate properties in cells, put there by evolutionary factors*, that must be baffling to all science.

As one understands more of the whole biology of the human body, he turns less to drugs for curative agencies. The body must be considered as a community of cells, and as a united state possessed of a wonderful ability to organize its land and sea forces. All therapy must be measured by its effect on the organization of these forces. In treatment, the great object is to make the human body into the very best fighting machine against the invading enemy—primary or terminal infections. More terrible to a waiting camp than the enemy's weapons are water and food famine and stagnant sewage. Mal-nutrition and stagnant lymph mean to the human body what famine, polluted sewage and destroyed ammunition mean to a regular army—capitulation without terms.

In conclusion, I trust your curiosity has been aroused, for my attempt has been merely to lead you to a hill-top in this new continent of thought, and to point out the complex landscape and the open roads. It may be true the valleys are hidden with mist, and the mountains with clouds and the soil is yet to be enriched by the growth and decomposition of thousands of ideas, but, nevertheless, this is the land that will yield us fruit, the eternal biological verities.

EYESTRAIN AND THE LITERARY LIFE.*

BY GEORGE M. GOULD, M.D.,
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BY means of the glimpses I could obtain from biographic and autobiographic writings, I have made a study of the disease of twelve patients who lived in the last century. These were DeQuincey, Carlyle, Mrs. Carlyle, Darwin, Huxley, Browning, Wagner, Parkman, Whittier, Spencer, Margaret Fuller Ossoli, and Nietzsche. If we fuse the data thus gained into a composite clinical photograph the lessons become more clear and striking. The diseases, or rather the symptoms of the one disease. common to all were headache, insomnia, "biliousness," sick headache, "nervousness," indescribable suffering, inability to do literary work without producing these symptoms, and relief of the symptoms whenever, even for a day or a few hours, literary work was stopped, and entire cessation of the characteristic symptoms at about 60 years of age. Here we have a definite clinical picture that differentiates the fundamental pathologic condition from that of any other disease.

The symptoms were briefly, and without quotation marks, as follows:

Of DeQuincey. Pain in the head beginning at 14; violent twitchings of the stomach during sleep, at 17; neuralgic affection at 18 or 19: nervous horror: irritation of the stomach; gastralgia; illness, dejectedness, biliousness, wretchedness, dizziness, a nervous malady of a very peculiar character, insomnia. The digestional difficulty was predominant

Of Carlyle. Dyspepsia; torture as of a rat gnawing at the pit of the stomach; bad health; nervous disorders; insomnia; biliousness: melancholy; cardiac symptoms. The dyspepsia was the leading complaint.

Of Mrs. Carlyle. Sick headache, nervous sufferings, insomnia. Hers was a case of life-long sick headache.

Of Darwin. Dispiritment: pain and palpitation about the heart; sea sickness; illness; inability to do literary work; disordered stomach; prostration of strength; sick headache: vomiting; insomnia; headache, great weakness. The digestive organs were those principally affected.

Of Huxley. Hypochondriacal dyspepsia; cardiac symptoms; unaccountable prostration; liver; headache; flatulent dyspepsia; mental depression. A case again of almost typical sick headache.

Of Browning. Headache; confused cerebral symptoms; depression; dizziness; deranged liver; nervous excitability. This is a case of almost simple headache.

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*Read before the Canadian Medical Association, August 25, 1903.

Of Wagner. Feeble stomach; sick headache; extreme depression: cardiac symptoms; insomnia; shattered nerves; intense irritability: violent headache. A martyr to sick headache.

Of Parkman. Dyspepsia; stirred-up head; photophobia; the greatest inability to use the eyes in literary work; insomnia; insanity feared on the part of friends and physicians. Mental, ocular, and cerebral symptoms dominant.

Of Whittier. Delicate health; great weakness; depression: palpitation of the heart; influenza; headache; weariness; rheumatism; cerebral symptoms; neuralgia; insomnia. Headache, physical weakness and sensitiveness were continuous from early manhood to the completion of presbyopia.

Of Herbert Spencer. Insomnia; inability to use the eyes except for short periods; queer feelings in the head. Insomnia was the chief complaint, others plainly being avoided by astute precautions.

Of Margaret Fuller. Headache, vertigo, nervous exhaustion, martyrdom to ill-health, insomnia, pain in the head.

Of Nietzsche. An intensification of almost all the preceding symptoms, especially the ocular and cerebral ones, with final ending in insanity.

The Strange Mystery of the Disease of the Twelve must strike one even with a hasty glance over their "biographic clinics." This lack of cause or reason for their sufferings struck each one, and pages of excerpts might be gathered showing their wonder. An unseen and malignant enemy or fatality seemed seated above them or at the very heart of their being, implacable and inexplainable. To their physicians they turned with beseeching question, and imploring aid. Some spent a great part of their lives in going from one doctor to another, or in dipping into quackery, in traveling for hoped relief anywhere, by "change of climate," "change of scene," etc. Most of them tormented themselves all their lives in dieting, and two gave much of their life to the hydropathic delusion. In every case the one fact stands out clearly, and it could be verified by any number of quotations, that their miseries were consequent directly and quickly upon use of their eyes in writing or reading, and yet not one of them, while repeatedly chronicling the fact with their own pens, ever caught a hint of the causal nexus.* That Mrs. Carlyle should have read in bed until the early morning hours and then have taken morphine to stifle the direct results of suffering; that

*Since the Wagner paper was published, and since this article was written, Mr. Ellis the biographer of Wagner, in a letter just received, tells me he has found an exception to this statement, showing a passing recognition on Wagner's part of the relation between eyes and dyspepsia. In a letter to F. Heine, Wagner writes, April 30, 1853, "Kurire deinen Bauch um der Augen Willen,"—"Cure your belly for the sake of your eyes."

Nietzsche should have taken two big trunks full of books with him when, broken down by eye-strain, he resigned his professorship; that each one told of his torture when he read or wrote, and not have seen that it was the reading or writing caused it,—all this is amazing. But it is the daily story in the oculist's office. That lay scientists and professional observers, as they might be termed, should have been incapable of perceiving the fact is as strange as it is pathetic. That their physicians should not have done so is as strange as it was inexcusable. The reason for the blunder of both patient and doctor is to be sought in deficient closeness and accuracy of observation, and consisted in a threefold error.

Three Inaccuracies of the Patients and of their Physicians. The first was to ascribe the disease to the organ in which the symptoms appeared or seemed to be most manifest. This folly still dominates most treatment to-day and underlies much error in our pathology. Despite a thousand proofs of the fallacy, it seems ineradicable. We acknowledge in words that the organism is a unit with absolutely interdependent parts, and yet we go on practically oblivious of the truth of the old fable of the belly and its members. When we vividly realize that distressing symptoms in an organ may have their origin in another and even in distant organs, we shall make an instant and tremendous advance in practical therapeutics. "Doctor, do you think it is my nerves?" is the primitive pathology of the simple, and is the exact counterpart of that which always traces headache to brain disease only, or digestive troubles solely to diseases of the stomach.

The second faulty observation consisted in thinking that intellectual labor *per se*, or an over-amount of it, caused the symptoms. Patients and scientists forgot that in the great majority of intellectual people it was and is not so. Humboldt, for instance, is said to have worked with his eyes about 20 hours a day for some 80 years. In the twelve patients mentioned it was not the working of the intellect, or the amount of it, that gave pain, but simply an accident of that labor, a certain mechanical, or, shortly, optical part of it, that produced the symptoms.

The third observational mistake occurred in thinking that the "change of scene" everlastingly advised, or "change of climate," or the walking, riding, visiting, etc., of itself, caused the relief. Again, this relief was merely an accident of the out-door life. Thousands of others did not require the change, and the relief of the sufferers was due to nonuse of the eyes at near-range work; if the cause was put in action, the symptoms recurred whenever and wherever the patient was. "Black care sits behind us on the crupper."

The Disease was Functional. De Quincey's physicians said he had "gastrodynia," a name utterly without pathologic meaning to the physicians of the past, or indeed of the present. All the patients had more or less severe gastric symptoms; in some it was the chief, called by various names, such as nausea, vomiting, biliousness, dyspepsia, liver, etc. The modern gastrologist knows nothing of these diseases except as the results of errors of diet, or of organic disease. Some modern surgeons would even go so far as to trace them all to gastric ulcer, for which operation is the only cure. In 1903 a grave medical journal has said editorially that even obscure gastric symptoms demand gastrotomy and excision of the ulcers. The answer to that, of course, is, first, what caused the ulcers? Secondly, it is surgical monomania. Such a modern surgeon would surely have gastrotomized our twelve patients. That affliction at least, was spared them! That the disease of all these patients was functional is demonstrated by the fact that they lived to the average or more of three score years and ten, and that it disappeared at the beginning of old age, precisely and illogically when the general vital powers were lessening toward death * The older each lived after this the freer he became from the peculiar kind of suffering which had made middle life so wretched. In the year 1902 a physician most well-informed,—at least, expert in other matters—traces to climacteric melancholia, plus heredity, plus neuroticism, the tragedy of one of these twelve, and adds that we call diseases functional because we cannot observe the minute anatomic or organic changes which underlie all such conditions. This seems to me a more foolish pathology than that which said simply, "gastrodynia," and let it go at that. Are there organic tissue changes in sea-sickness? That is a very real disease while it lasts. Why does it last so short a time? What caused the changes?

The Variation of the Symptoms. It is a truism of medicine that there is no typical case, even of organic diseases. The "soil" is of as much influence in producing symptoms as the "seed." And of functional disease this is peculiarly true. The symptoms of eyestrain are amazingly complex and differ in some respects with every patient. More than any other morbid cause, its effects are multitudinous. When the role of vision and the functional relations of the eye with the organism, and with life, are understood, the reason for the infinite variety of symptoms is seen. The two things that bind all to unity are the certainty of a common cause, and the equal infallibility of the therapeutic test. If use of the eyes produces any of these results, it is almost surely the cause; if disuse of the eyes relieves, it is doubly sure; if, without disuse

* With the exception, of course, of Nietsche and Margaret Fuller Ossoli.

of the eyes, proper glasses does the same, the demonstration is beyond all question. In every one of the eleven cases, disuse of the ametropic eyes did give temporary relief; the paralyzed accommodation at about 60 did the same thing permanently, and added great ability to the power of ocular use; these symptoms in thousands of American patients have been instantly extinguished by lenses properly correcting the ametropia. The demonstration is perfect.

The Result in Lost Time and Opportunity. If De Quincey's opium-eating, as I have no doubt, was due to his eyestrain, then a large part of his life was certainly wasted from that cause. Surely three-fourths of Carlyle's working time and ability were spent in horseback riding, walking, and in recovering from the exhaustion of writing. He produced during his working life about one-half page a day. Much of Mrs. Carlyle's life was spent in 30 or 60 hour continuous vomiting, and in suffering, and if this could have been avoided, the time, and much good white paper, spoiled by critics, biographers, concerning her and her husband, would have added greatly to the national income—especially in the saving of paper! Darwin was able to read or write only about two hours a day, and his literary product was less than that of Carlyle. The rest of his waking hours, those he did not waste fighting insomnia, were spent walking like a dumb animal about his "sandwalk" or more foolishly enduring the brutal water-cure. Fortunate it is that if he could not read and write, he could think and observe. The output of great minds is to be measured qualitatively, of course, not quantitatively, but ours is the grievous loss, nevertheless.

Just at the climax of Huxley's sufferings, at the zenith of his powers and at the moment presbyopia would probably have given him relief, he was compelled to resign and take to the moors. For 45 years his life and power of work had been greatly crippled by his sick headache. What a tragedy! What a loss for science! Browning avoided suffering, by avoiding eye-work, by going to Italy, by living in the open air, and when he could not do this, in living, as his biographer says, "upon the surface," and by "countless social engagements."

Wagner came near committing suicide many times owing to his tortures. He also squandered a large part of his life in hydropathy, diet, and walking, until relief came all at once from three apparently supernatural sources.

Parkman himself estimated that 75 per cent of his life had been wasted by his inability to use his eyes. He avoided the agonies of others by simple renunciation. Not being ingenious Yankees, they never had a "gridiron" nor recognized the need of it. Parkman's output for 14 years was

about 6 lines a day, and his life product was but little greater. The hideous waste of his superb powers and valuable time was, I think, fully 90 per cent.

All the newspapers which Whittier edited until he had to quit all literary work except versemaking, had to be discontinued because of his bad health. He was forced to renounce his splendid ability as statesman and reformer, and for the rest of his life retire to the farm to nurse his health and write a little poetry.

Spencer avoided suffering by cunning precautions, in nonuse of his eyes; more deftly still he hid his lack of scholarship (German, metaphysics, etc.), which was denied him because he could not study.

The pathos of Margaret Fuller's life came from the fact that her little work, her poverty, and her death itself were due to her eyestrain.

The havoc wrought by eyestrain in a genius the natural peer of any, the superior of most, in the German professor at 24,—the incomparable Nietzsche—is so pitiful and awful that one can scarcely speak of it with restraint.

The Result in Suffering is incalculable and horrible. There are and will be biographies of these people which will not allude to it, and physicians and medical editors have been known who smile ironically at the "exaggeration" of "vivid imaginations;" there are numberless asses who think they are excused from all sympathy with a Carlyle or a Nietzsche, and have no need of a thousandth of their nobility of character, because they, the ignoble long-eared, disbelieve in something the great men have said or taught. "Let us be contemptible because their philosophies are so,"—one seems to overhear. The misery of the pain of one attack of the nausea of sick headache has not been equaled except in some medieval or oriental torture chamber. When for some profound reason the dominant and oldest instinct of the organism, that for food and nutrition, is violently reversed, it should be plain even to the stupidest lay mind that the deepest wrong exists and that the very springs of life are being drained. Add to this another symptom almost equally terrible, intense pain in the brain, the organ controlling both character and life-processes, and what disease could be more desperate? How many of our patients had sick headache it is impossible to tell, owing to the disinclination especially in writing and biographies to speak of vomiting. Probably most of them did have it more or less. Of Mrs. Carlyle, Huxley, Wagner, and Darwin, it was almost constant when the eyes were used in near-work. Whittier, Nietzsche, De Quincey, and Carlyle suffered from it also. Spencer, Browning, and Parkman escaped, undoubtedly by means of not driving the eyes to the degree of

use that would produce it. But headache alone without the "30 or 60 hour" retching is bad enough. Then it must be remembered that for geniuses like these upon whom was laid the awful duty of world regeneration and enlightenment, the mental anguish from knowing their life-work frustrated, was greater than any simply physical suffering could be. This comes out with tragical emphasis in a hundred quotations that I must omit. Until insanity came to his rescue, the mental and physical agony endured by Nietzsche is one of the most terrible spectacles one can imagine.

Insomnia. There were but two of the twelve patients who were not extreme sufferers from inability to sleep. Of some it seemed the chief complaint, and the bitterness and reiteration of the trouble by most was so great as to make this symptom of exceptional interest to physicians and physiologists and to demand a scientific explanation. For 30 or 40 years, several, one would judge, could get on the average but two or three hours of sleep a day; a full night of sleep was hardly ever or never secured, and the attempt to rid themselves of noise constituted their greater trials and expenses of practical life and dominated all plans and methods of domestic economy. Oriental cruelties, physiologic laboratories, etc., have demonstrated the absolute necessity of sleep, the fatality of enforced weakfulness, and every one knows from personal experience how all health and happiness is dependent upon that strange lapsing of consciousness. There is an unconscious divinity of physiology, one at least whose consciousness is so different from ours that we call it unconscious, though it is more ingenious and purposeful than man's most exalted and scientific vision can ever suspect.

Is it not true that the biologic divinity never sleeps? Is it not simple fact that for 16 hours a day he lends to our consciousness, as temporary engineer in charge, the marvellous machine we call the human body and brain? Is it not as evident that even while we as engineers are in charge, his attention is always present in every bolt and bar, in every organ and every cell? One of his little, but to us as physicians, conspicious functions, we have named *vis medicatrix naturae*, the healing power of nature, the wonderful art of instinctive unconscious repair, the amazing and perfect proof of the very presence of God. Is it not again the oldest of physiologic truths that in highly complex and differentiated organisms like ours, the conditions of repair and healing are intermediated by cerebral and neural control? In other words, our derived or subordinate consciousness works by means of the cerebral mechanism loaned to us by the sleepless chief engineer for two-thirds of the twenty-four hours. Follow the logic one link further and it is seen

that while the locomotive is put in our hands, it cannot be repaired. It must stop running and go into the shop for repairs. It is noteworthy that even if no repairs are needed, an ordinary railway locomotive gets tired and must literally be rested. A simple bar of steel, it seems, needs sleep, rest from continuous strains. More strikingly does the human machine require the lapsing of our engineering control, and so of our consciousness. This, or something like it, is the philosophy of sleep. And now for the application to our subjects; the astigmatic and anisometropic eye can scarcely rest from muscular or innervational strain for a second of the sixteen waking hours. The heart rests every beat; every organ and every muscle rests, because no muscle can be steadily innervated for more than a few minutes without painful effort. The safety of the organism, the "making a living," requires this 16 hour restlessness of the astigmatic eye. Nothing like this denial of this absolute law of physiology exists in any other organ of the body. The eye dare not be injured, and the natural injury to it must be reflexly shunted to the brain or to other organs; in extreme cases of overuse, the fundamental conditions of organismal existence, nourishment and cerebral control, are denied and the organism itself is profoundly hurt or even destroyed. That, or something like it, is the philosophy of eyestrain and of reflex ocular neuroses. Lastly, the injury to the cerebral and neural mechanism and its exhaustion and injury is so great by the sixteen-hour struggle that when at night it is given over to the chief engineer, the repairing is such an active process that there is no rest possible and the human consciousness is aroused, is awakened by the very stir and din of the repairing process. That, or something like it, seems to me the philosophy or rather physiology, of the insomnia of eyestrain.

It may be of interest to note in this connection that eyestrain commanded all of our patients to reverse the proverb as to the value of the "midnight oil" to the student and literary man. The eye and brain, tired and disordered by the day's struggle, cannot work at night, and especially by the poor rushlights and candles of the last century. It cannot do so even with the best poor lights of our time. Only in the early morning hours could these patients find enough resilience of mind and strength of eye to do any original work.

The Digestional Reflex, next to insomnia and headache, was the most pronounced and constant symptom of the twelve patients, and of nearly all, it was the most crippling and dangerous. The roles that biliousness and dyspepsia have played in civilization and are still to play, are indeed far from "play," are as serious a part as those of any, possibly of all infectious diseases combined. That, I know, seems exaggeration at

first sight, but not when one reconsiders the fact that denutrition is the fundamental preparation of the "soil" for the reception of most organic and infectious diseases. It is, indeed, a dangerous thing to "explain" or, rather, to attempt to explain, the mechanism of intimate physiologic and pathogenic processes. Most physiology of this kind is crudity and error, guessing at best. In two thousand years I cannot find that the medical profession knows at all certainly what biliousness and dyspepsia really are, and we are surely further still from knowing their causes, and the mechanisms of the causes. Rough observation, crude clinical facts, are about as far as we have got. One shrinks from too much parading of his own clinical experience, but each day of sixteen years, and many thousands of patients, have convinced me that eyestrain is the almost sole cause of the awful disease of sick headache, that it causes a vast deal of so-called biliousness and of dyspepsias of many kinds, and that correction of eyestrain often relieves these troubles suddenly and as if by magic. I frankly confess that despite all pondering over the fact, and study of the physiologies, I am in doubt as to the mechanism. In a general way and usually the head is an inhibitory organ to the so-called vegetative or unconscious processes of the body, but eyestrain is such a peculiar disturbance of cerebral function that one doubts if it is essentially an exhaustion and depletion, or an excitant and irritation. Certain observers have thought that some types of diarrheal diseases are due to it, but the distinct evidence of the twelve cases studied, and of my own clinical experience, leads me to think it is usually, if not always, inhibitory to the digestional process. The vomiting would argue for this also very strongly. Physiologically both the diarrheal and constipational processes may, I understand be results of the same initial inhibitional and indigestional cause. Indeed the symptoms of essential excess and deficiency of nerve force, of hypersthenic and asthenic disturbance may be the same apparently, or so similar as to end in confusion. Irritation and exhaustion sometimes seem mere names denoting phases of a single underlying morbidity. Several of our patients and quite a number in private practice, have exhibited palpitation of the heart, lapsed beats, irregular rhythm, etc., as an undoubted result of eyestrain. If stimulation of the pneumogastric nerve, as we are taught, results in increased rapidity of the cardiac beat, it is by no means clear that this inhibitory acceleration will explain the cardiac complications of eyestrain. It is a disturbed rhythm, an irritability, a disordered function rather than an acceleration, with which we have to do. The study of the headaches of eyestrain, the migraines, the localization and almost infinite varieties of them, and of the mental or psychic functions,

also leads us into the mysteries and contradictions of cerebral function and localization of function which are so far beyond the unraveling of science. Choreas, twitchings and tics are proofs of sthenic irritation and disorder, while pareses and even paralyses, sometimes also due to eyestrain, are of course only explainable on the theory of exhaustion and inhibition. But facts, accurately observed, precede philosophies and sufficient unto the day is the evil thereof!

"*Irritability*" *and* "*Nervousness.*" The biographies and letters of patients are filled with evidences, expressions, and facts, going to show cerebral and emotional irritability, what, for want of a better word, may be called nervousness. The passion for activity, the desire for change and movement, are often uncontrollable and the words used to express it are painfully intense. It rises to morbid extremes just in proportion to the amount of eye-work demanded or completed. In every one it took the form of physical exercise, usually of walking. Carlyle walked numberless miles and rode one horse some 20,000 miles. De Quincey walked around his "measured circuit" 1,000 miles in 90 days; during his life he averaged 15 or 20 miles a day in walking, often far in the night. Darwin trudged about his "sandwalk" all the time he was not hydropathizing. Huxley's only relief was 10 or 15 miles a day. Browning, Parkman, Wagner, Nietzsche, even Whittier, were forced to the same plan of life, each in his special way. Even Mrs. Carlyle says she walked from 6 to 10 miles a day for 10 years. Parkman's early fiery athleticism is positively morbid in its intensity; in his youth De Quincey ran to vagrancy for years, and Darwin's devotion to sports in his college days was the despair of his father; and so on. There can be no doubt that this commanding impulse made Darwin take the *Beagle* voyage, made Huxley join the *Rattlesnake* expedition, and turned both from other studies and living to natural history and science. When Parkman was denied the power of reading and writing, and when he could not live among the wilds or go into the army, he devoted himself to horticulture for 14 years (by means of low stools and rolling chairs), and when he could not do this he rowed or practiced sedentary gymnastics. Spencer avoided danger by recreation, and because Nietzsche denied the need of walking and action so much, forcing his eyes to a relentless fury of study, he positively went insane. Wagner felt he would literally go mad unless he should relieve himself by exercise, and he deeply cursed the "damnable organ of sitting still." That they lived to ripe old age, that their health improved as they grew older, that when very old most of them could outwalk all the young men,—all this shows that their hearts were not organically diseased, that

they were essentially physically sound, and that their ailment was truly functional. The demand and ability to carry out life-long physical exercise also points to an overplus of nerve force and an undeniable necessity of draining the surplus innervation to the large muscles of the body. But it also points more surely and clearly to the fact that only by this means could the eyes be rested and the source of reflex irritation shut off. That, or something like it, appears the plain philosophy of the "nervousness" of eyestrain sufferers, and their absorbing need of physical activity. The greater number of literary men and intellectual workers show no such uncontrolled necessity, because these have no eyestrain. Whenever one has such patients, or reads of such men being great walkers, look out for eyestrain. Truant schoolboys are to be studied from the same standpoint. When 50 per cent. of epileptics have unsymmetric astigmatism, it is suggestive of a possible ocular origin of their disease, even though when epilepsy is fully established and extreme, it may not be curable by glasses. When young criminals are found to have an enormously high average of high hyperopia,—such as would absolutely interdict study and handwork—what can they do, if poor and naturally unmoral, what can they do but drift into crime?

Apathy and Exhaustion seem at first sight utterly at variance with a synchronous exhibition in the same patient of nervousness and an impulse, not to be disobeyed, towards activity. In Whittier the exhaustion, anemia, and apathy, were more pronounced than in any of the others. In Darwin the psychic fatigue and depression co-existed with the spurred and jaded body. In Wagner and Mrs. Carlyle it came to a feverish coexistence and alternation of exhaustion and activity, both morbid. In the others it phased itself in varying degrees of predominence and alternation. The intense melancholy and depression of Carlyle, Whittier, Darwin, Wagner, etc., and of most "dyspeptics" is proverbial, and has even provoked many absurd pathologic sayings, themselves pathologic, such as "Genius breeds upon a dyspeptic soil," etc.

One heartrending result of their exhaustion was the desire or fear of death, or of worse than death, insanity. Darwin was always on the edge of despair and at one time in middle life made his will in view, as he thought, of approaching death. Carlyle often shuddered at the apparent uselessness and fatigue of life, and the advisability of death. Wagner was constantly tempted to suicide, and at one time seems to have resolved upon it. Whittier, Nietzsche, Wagner, all were convinced, in youth or mid-age, that their lives had been lived out, and that nothing was left to do, at least no ability to do it. The peculiar nature of eye strain, the rapidity with which it produces morbid reflexes, and is

relieved, easily explains the facts of the co-existence and alternation of exhaustion and irritation. They are mere aspects of one neural and psychic fact.

The Ocular Symptoms. One eye of De Quincey was kept closed in the latter part of his life when he was reading or writing, and is plainly divergent in his portrait. That proves a life of intense ocular strain. In the latter part of Wagner s life at least, the left eye was turned upward and outward and the forehead wrinkled to keep the lid above the pupil. That demonstrates many years of grievous suffering. Parkman's photophobia was his first and most constant symptom during life; he also had blepharitis and meibomian cysts. Pain in his eyes was as constant a symptom with Nietzsche as pain in the head and gastric trouble. Most people would think that because of these ocular symptoms, such patients more certainly had eyestrain than the others without a single ocular symptom. This is not so. The almost universal rule is that the more severe the reflexes the more certainly the eyes themselves do not complain; or conversely, the more the eyes are injured by ametropia, the less the reflexes are shunted to other organs. That five out of twelve striking cases of eyestrain had severe ocular symptoms is highly exceptional, and shows that their defects were peculiarly irritating and the labor to which the eyes were put was particularly severe. Parkman's photophobia was very exceptional. In old countries where patients do not have their errors of refraction properly and accurately corrected, one frequently sees patients with blue or colored coquilles or "goggles" such as Parkman wore in the sunlight. Eyestrain frequently produces sensitiveness of the eyes to light, but in Parkman's case there was an extraordinary high degree of it. Parkman avoided headache at least, if not gastric trouble also, by stopping near-use of the eyes. His "stirred-up head" with the least use of his eyes, would also stop when he ceased to work with eyes or brain. The most noteworthy of all the cases was that of Nietzsche, in whom eyes and brain suffered equally and coincidently, both more than the digestive system, and all ingravescent, until his mind gave way. This demonstrates the marvellous balance and equal resistance of all his organs and powers. The eyes first gave way, then the mental mechanism.

Some other Symptoms. Connected with the insomnia of eyestrain is the symptom of night-terrors, bad dreams, restless sleeping, etc., noted in the child Wagner, and in almost every child brought to the oculist's office. Unless relieved in the one possible way, it means a life of intolerable suffering. I have in a day cured a number of children of nocturnal enuresis by glasses alone. The fickle appetite, especially for breakfast

the anorexia of such children, is also indicative of the same morbid cause. Extreme sensitiveness to noise is an aspect of the symptom of insomnia that has been noticed. Complaint of the "nervousness" of patients young or older, the "fidgetiness," etc., of the waste and rush of our modern nervous life, fills the newspapers and magazines. Much of it is due to eyestrain. As high a proportion as 50 per cent. or over of modern school-children are pronounced backward or subnormal in physical and mental qualities. Child-suicide, the most frightful symptom of civilization, and general insanity, are both mathematically in proportion to the number of hours of school-study demanded.

A critic has spoken lightly of the vast amount of drugs taken by the Carlyles in their struggle to prevent or cure their diseases. Quain was scornful and said that drugs and gingerbread caused Carlyle's woe. Nietzsche's sister, as much as the beautiful soul can be, is harsh-toned when she alludes to her brother's drug-taking. But what else could they do? Who would not do the same under the like provocation? And Mrs. Carlyle would have been happier if she had taken as much morphin as Mrs. Browning. It is indeed true that opium was a blessing to De Quincey, as he said it was.

Before stopping I wish to allude to facial eyestrain expression. Observant oculists notice it when some patients enter the room. It is not always present, just as ocular symptoms may be absent in the worst cases. I should say that the expression of the eyes and face is characteristically morbidized in 50 per cent of such patients, especially the older ones. In children with eyestrain anemia, anorexia, and night-terrors, it is however, usually to be detected. It is not a result of heterophoria, the latent or the permanent turning of the eye outward, such as De Quincey and Wagner had. That is a different matter and causes a different expression. It is an almost indescribable haunting signal, as of exhausted and hopeless suffering, a sort of haggard, sunken look, telling a tale of pained, tired, and useless effort. In the late photographs of Darwin, of Carlyle, of Mrs. Carlyle, and of Whittier, it is evident, and suggestions of it exist in those of others. (It was this look that first suggested to me many years ago that Carlyle was an eyestrain sufferer). It is plainly present in the pictures of Beethoven, Tennyson, Mrs. Browing, etc. The "Bachelder eye" of Webster, Whittier, etc., I suspect was a result of the intensity and victory of the effort to compensate for the eyestrain present. Old painters sometimes reproduced the eyestrain expression more or less perfectly in their pictures of medieval saints and ascetics

Lastly, I cannot forbear allusion to the influence eyestrain sequels have had on the growth, during the last century, of European spas and

health-resorts, springs and waters, sanitariums, cures, establishments, etc. The histories of the search for health at these places by Wagner, Nietzsche, Darwin, Parkman, and Huxley bring vividly before the mind directly, and as much by indirection, that these resorts came into being largely, if not principally, in a pitiful attempt to cure eyestrain. Pleasure places and fashion resorts, one realizes often grew out of the superstition. The hunt for diet doctors and water doctors was so intense that its ludicrousness is almost as crying as its unavailing resultlessness, and both are only equaled by the pathos of it all. Hydropathy, its gulls and its gullies, are still dismally echoing in the twentieth century. The peculiar kinds of diseases and of patients on which fatten a hundred forms of quackery, eddyism, osteopathy, absent healing, and all the nauseating rubbish of several million maudlin American cranks and scamps, are also in big part due to an attempt to treat astigmatism by ignoring it, or by means of that potent article of the materia medica, vulgarly named "tommy-rot."

Intercurrent Diseases. Several of the patients, e.g., De Quincey and Nietzsche, seemed extremely subject to influenza or colds; and especially Mrs. Carlyle. When not suffering from headache she was always suffering from colds or influenza—"eight influenzas annually," said Miss Martineau. They afflicted her all her life, most exasperatingly and most wearingly. I have not copied all the excerpts which prove the continuousness and severity of these seizures. It is gratifying to be able to quote a great medical authority that such attacks of colds and influenzas—

"May be due to microorganisms, or local conditions in the air passages, but these maladies, as we now know, both depend to some extent on a special predisposition in the sufferer, having its root in the nervous system, and both leave their stamp on that system and gradually undermine it."

Now here is a truth, or a glimpse of it, that deserves most careful pondering by the profession. In Mrs. Carlyle's case it is noteworthy that these colds and influenzas did not co exist usually with headache and sick-headache; that they came on in a most unaccountable manner, without explainable reason, usually in winter, and remained long; and most remarkable that they ceased at the time of the great change in 57 or 62. Wet or foggy, or not, driving, sailing, or not, she is at this time, "perfectly astonished with the impunity, etc." All of Mrs. Carlyle's sick-headaches were caused by eyestrain, a fact beyond all question. As little doubt can there be that no cause can more directly and infallibly upset and morbidize the nervous, mental, and nutritional

mechanisms. It thus supplied the "nervous system" with precisely the predisposing condition Sir James Crichton-Browne gives as the cause of colds and influenzas. The inference is very suggestive that Mrs. Carlyle's influenzal attacks were the reflex results of eyestrain. The smile of incredulity with which the allwise may receive the thought has nothing to do with its truth or falsity. In private practice the fact of the interconnection of nasal and ocular diseases has often been noted. Illustrative cases have been published. The details of one such are of exceptional interest:

A healthy, clear-headed, intellectual man, was given two pairs of spectacles for his myopic astigmatism, a stronger or higher correction for use at the theater, driving, etc., a weaker correction for reading and daily or constant use. For a year his wife and daughter observed, without telling him, that whenever he wore the strong, or accommodation-exciting glasses, he "caught cold," with coryza, hoarseness, etc., which at once disappeared when the weaker lenses were used. He used the stronger ones but a few times a year. When certain of the strange coincidence his wife told her husband. In the past ten years the cold has been produced in this way—a hundred or more times. Now if his weaker glasses get "crooked" or maladjusted, miscorrecting his axis of astigmatism by a few degrees, his cold promptly appears, to vanish in an hour after a visit to the optician.

Such cases of the interrelation of nasal and ocular disease may be rare, but the careful diagnostician will always be on the lookout for them.

Several of these patients also complained of paretic symptoms. It is not impossible that they were due to a reflex ocular neurosis for I have had cases of numbness, aphonia, pareses, and partial paralyses of hands and arms due directly and beyond all doubt to severe eyestrain, and disappearing at once with relief of the cause

Nietzsche, Mrs. Carlyle, and others, had more or less constant rheumatism, and Parkman had life-long arthritis. A sound and healthy hip-joint, the supposed seat of neuralgia, has, I have read, been opened for toothache. Mumps may be located in the parotic or in the orchitic gland, and cases have been reported of transmigration to the brain. One who is careful to avoid the subtle demon of prejudice will not rush into dogmatism about the matter, either that such rheumatic affections may depend or may not, upon eyestrain, that is upon the ocularly-caused abnormalized nerve centers of control, vasomotor, reflex, or nutritional. There are multitudes of more seemingly absurd facts than that, well attested too, by physiology and pathology. Throughout his eyestrain

life from childhood on, Wagner was bothered by ever-recurrent attacks of erysipelas. How far that affection may also depend upon innervational and morbid vasomotor antecedents, I do not know, and I suspect no other does.

The Heredity Theory. When a certain class of medical and other scientists cannot explain a pathologic fact that is unduly troublesome, there is a hasty scuttling to the protection of the god of heredity. In one of these eleven cases, to the facts that the father died of typhus fever, that uncles and aunts had few children, and that the patient had sick-headache, is ascribed her sick-headache. That seems hardly scientific, and certainly does not explain her "climacteric insanity" nor her sick-headache. Heredity is not at all understood and has been unduly and illogicly advanced to explain disease. It may be fairly said that it fails to explain more frequently than it explains, and the instances in which the supposed law is absolutely nonexistent are more numerous than those in which it seems to give hints of a possible reason. Browning's physician acquiesced in the fatalistic necessity of his patient's headaches because in facial expression he resembled his mother. He forgot to ask where Browning's mother got her headaches, and if it were necessary to go back to Mother Eve. As all the world do not have headaches it would follow that one half, exactly, must have them (possibly correct) and that Adam had none. From such childish science one can only turn with the evident question, what caused the headaches in the mother and in all ancestors?

The Climacteric Theory should have long since been abandoned. In order to apply to women it should have been noticed that the sexual climacteric is not synchronous with the climax of the symptoms. These grow more intense for about ten years after the menopause, and this fact makes a careful observer smile ironicly at the pitiable hint of over-sexual minded women patients and of the professional opinion which has encouraged it. The mere cessation of a function not necessary to the life of the individual organism, hair-growth, loss of teeth, loss of eyes, etc., even the excision of arms, legs, uterus, etc., does not produce positive symptoms. The *coup de grace* of this ridiculous climacteric insanity nonsense is given by the very simple observation that the climax of the same kind of sufferings of men comes at the same age as in women, and if men have a sexual climacteric at that age, the genito-urinary surgeons have misinformed us.

A Physiologic Truth Ignored. Concerning the twelve patients considered, of all earthly things each most needed a simple optical device to have freed them, and to have turned the bitterest tragedy to perfect

joy. All except one, inheriting the traditional and ridiculous prejudice, affected to scorn spectacles. For the rest, none except one could have obtained scientifically correct ones, and only in his old age, and he, alas, failed. Optics, opticians, scientists, physicians, all had forgotten that simplest of physiologic truths that no muscle can be steadily and continuously innervated without pain, even for a few minutes. Of the ametropic eye the literary worker demands such an unrhythmic strain of innervation for consecutive hours, and for five, ten, and even sixteen hours a day. The intimate association of the eye with every organ of the mind and body, the amazing delicacy and complexity of the mechanism of vision itself, the absolute dependence upon it for safety and sustenance, makes accurate seeing the *sine qua non* of the life of the organism. Accuracy in this supreme function has been insured by the punishment, on Darwin's own principles, of the organism endowed with the faulty organ—the head cannot direct because of pain, and the stomach with connected organs will not supply food to any part of the machine because it cannot digest. The sole conditions of safe and useful existence, the mathematically picturing eye, being denied, nature strikes work and refuses brain and digestion. That may sound somewhat transcendental, and deductionist in logic, but if Darwin, and Spencer, and Huxley are correct in their science, it is exactly what takes place in the struggle for existence by the elimination and destruction of noncompeting and unsuccessful organs and organisms. Science and medical science, flushed with bacteriology and surgery, and prepossessed, obsessed almost, with the thought of the infectiousness of disease, may neglect this truth, but not for much longer, and already with danger and expense.

The Cause of Disease and the Cure. Just now the cry goes up from a united profession, and is appealingly echoed by kings and prime ministers, "Discover for us the cause of cancer." The most famous man in the world would be he who should make the discovery, and he would be justly honored. But might it not come out that after all our acclaiming we should be no nearer an effective therapeutics than now? We know at last the causes of the two diseases of the respiratory organs which kill more than any other two. Is their deadliness any less because of our knowledge? It emphasizes the measures of prevention, and proves they are proper, but tuberculosis and pneumonia kill as many as before. Prevention is not the same as cure, it is of course better; but the laws of prevention are learned by simple observation, seeing macroscopically rather than microscopically, and reasoning straight from that, plus effective putting into practice of the known needed thing. It is again the old question of morbid soil and morbid seed. Hygienic living

remains still the one preventive of the pulmonic conditions which make pneumonia and tuberculosis possible. One of the most successful, one of the most potent preparers of the morbid soil for any infectious disease, is eyestrain, and it will in time be recognized as such. There is no single more prolific source of the anemia, denutrition, than eyestrain and its reflexes, which prepare the soil wherein may spring up the weeds of any disease.

Eyestrain and its Results Depend, first, upon the kind and degree of ametropia and muscle imbalance, the latter a secondary and rare factor, The low and slight astigmatisms and anisometropias are more injurious to the nervous system than high errors. High errors change character and occupation, low ones disorder nervous control and nutrition. This is because the low error can always be only temporarily neutralized or compensated for, while at the same time the attempt to neutralize can never be renounced. It is a true task of Sisyphus.

Second: The results of eyestrain depend upon the kind of organism in which they occur. The chemic reaction depends upon the substance in which the reagent falls. If the resistances or vital powers are great the effects will be small, even of bad kinds of ametropia, while a small strain upon a morbidly unstable organism will end in disastrous consequences. The reflexes, like all forces, will take the line of least resistance, and expend themselves on the less resistant organ. In an organism like that of Nietzsche, with splendid and equally resistant cerebral and nutritional systems, no one will give way, and the invader, not dreaming of desistance, the storming of all the defenses continues until the defending general sacrifices himself for the cause of peace and to save his few remaining supporters. Rare as they are, such "victories" exist, and are the most lamentable of the results of the war of civilization.

Third: Although but two of our twelve patients were women, the hurt of eyestrain generally is greatest in the female sex. For several reasons the incidence of the morbid effects of eyestrain falls far heavier upon women than men. Their organizations are more unstable, they are more emotional, and they are more sensitive to slight stimuli or inhibitions than men. These are powerful and effective reasons. I see other vague but real reasons why femininity, sex itself increases the liability, but I cannot even recapitulate them here. Outweighing all the others, however, the dominant cause of this seemingly unjust law of nature lies in the simple fact that women do most of the sewing, have more leisure for reading and handwork amusements, and because they live indoors far more than men. It is true that men are seizing upon many of these occupations, tailoring, handicrafts, etc., but that only makes the woman-tragedy the more severe and bitter as they are forced to other kinds of

more enslaving eye-labor. The suffering that is going on in conventual and educational institutions, and in the sewing-rooms of the old countries, is literally appalling. A charity that would supply poor workwomen and workmen with the services of scientific oculists and scientific spectacles would stop more suffering than the combined almsgiving of the world.

Fourth: But the preceding conditions all depend upon a fourth. Eyestrain is wholly a disease of civilization. It is entirely an occupational disease. As an Indian or an African savage, the ocular defects of any of the twelve patients would not have produced a single morbid result of the kind illustrated. Even a basket-weaver or arrow-chipper with the astigmatism of a Nietzsche, would have found other work or been forced into it. He would have failed in the chase or in any art requiring accuracy of vision, and the god of natural selection would have dispensed with him in the old terrible way; there would have been no pain or insanity. This is because the morbid results of eyestrain depend entirely upon use of the eyes within reading or writing, or hand-distance. The more such use the more baneful the consequences. Civilization has multiplied a hundred or a thousand times the amount of such near-range work, and the multiplication still goes rapidly on. In making the eye, evolution never foresaw civilization, and that mechanism, created for accuracy of distant vision, is most glaringly ill-adapted for the near vision our modern life relentlessly demands. There are a few occupations in civilization, slowly being weeded out however, in which our twelve patients could have been happy if—and what an if that is!—if they could each have renounced the intellectual life. Under this proviso they could have been contented and useful citizens, *e.g.*, as osteopathists, mental-science healers, policemen, night-watchmen, stage-drivers, cattle-drivers, cowboys, burglars, or even political bosses and senators,—but they could not have passed a civil-service examination, or have been of intellectual service to their fellowmen.

"*Great Wits and Madness.*" Dryden's famous couplet is a poor and untruthful variation of Aristotle's "No excellent soul is exempt from a mixture of madness," and of Seneca's *Nullum magnum ingenium sine mixtura dementiæ.* The truth, the little truth, there may be in the sayings, consists principally of three constituent errors: 1. The people who accept such a psychology of genius and insanity are themselves incapable of knowing or understanding in what genius or madness consists, and view both as something alien. They are in no danger of illustrating either *ingenium* or *dementiæ*; 2. They may drive the genius into dementia by their stupid unrecognition and even hatred; 3. A genius may go mad because of eyestrain. Mrs. Carlyle,

tortured for forty years by excruciating bodily suffering, may, in the crisis of pain, and the mystery of it, gaspingly demand a promise that if she goes mad she shall not be put in a madhouse; De Quincy may prevent pain and insanity by opium; great alienists may assure Parkman he will soon be a maniac, and may class Schopenhauer and Wagner as such; Wagner may live in fear of it; and Nietzsche may be crushed into the horrible actuality of it. It all proves not the silly pathology of the proverb, but the sin, and the want, of medical science. A simple, or rather, speaking in optical terms, a compound pair of lenses would have absolutely prevented the entire tragedy in each case.*

Influence of their Diseases upon the Character of their Work. The life-work of DeQuincey, the best classic scholar in Europe at the age of 14, in view of that marvelous beginning, must be pronounced pitiably disappointing. So far as its morbidness and other qualities were directly due to opium, they were also, I am sure, due to eyestrain. So far as he failed to utilize his great intellect the result was directly due to eyestrain. There cannot be any doubt that the pessimism, gloominess, injustice, exaggeration in style and judgment, dictatorial and overbearing harshness, the history in lightning flashes etc., of Carlyle, are the consequences of the disease which made him write, as he said, with his "nerves in a blaze," "in a red-hot element which wastes the life out of me." That is to say, a fury of innervation had to be aroused to overcome the eye-defect. This intensity was ruinous and was of course followed by an equally morbid depression and exhaustion. A similar method and result was necessary in the cases of Wagner, Nietzsche, and was present in a minor degree in Huxley and others.

Surely the frequent over-critical sharpness and acidity of Mrs. Carlyle's letters, and possibly of her conduct, were the cry of her suffering brain.

Darwin's lassitude, his lack of physical energy, the dragging step and the spurred jadedness showing in face and walk, seems also present in his slowly formed conclusions, and in a certain irresoluteness of style and matter.

In Huxley a love of polemics and a controversial harshness, etc., may have been due to the exasperation and intensity which his malady produced

* Three months ago a professional student from a great university came to me with a typical history of intense eyestrain which had forced him twice to renounce his intended career. Utter breakdown was again upon him. The cerebral and psychic symptoms were terrible Suicide was constantly in his mind. He returned recently to thank me for his glasses and to say he is happy and studying hard, and that he stands scornfully smiling at the locomotive as it approaches him, while he has not the least hint of his old impulse to throw himself before it.

The naturally rugged and English intellect of Browning may have been directed to recondite metaphysical and ethical subtleties, and his expertness as a versifier almost destroyed, by the cause that set him to walking and working in Italy, instead of among Anglosaxon scenes and peoples and to be satisfied with hastily grasped truths that did not need the artist's reworking and polish. The change to England "had a most depressing effect." His involved and obscure sentences, abrupt breaks, interpolations, etc., are possibly the result of the eyestrain that would not allow finish and outworking. His MSS. show few corrections.

How much more perfect and wonderful might have been the almost perfect and always wonderful art works of Wagner if he had not had a quivering and suffering and exhausted nervous system! Instead of the contentious and unneeded controversialist prose writings, and especially the pessimism which is an almost inevitable result of a tortured and jaded nervous system, instead of frequent crudities and much over-emphasis in his operas, we might have had a hundred times the number of heavenly things he has left us.

Parkman's affliction seems to have had little result upon his literary work except to limit tremendously his productivity. Unless over-conciseness and prosaic sternness were consequent upon the prison-like narrowness of his necessities, the iron logic of his character defied all the cruelties of fate to change or modify his mind or the quality of its work.

Whittier was a true neurasthenic, without a single clinical symptom of what goes by the etymologically absurd name of neurasthenia. The sad apathy of his mind and body late in life is in sharp contrast with the fire of the earlier anti-slavery reformer and politician. His poetry reflects the altered necessity of his life.

Herbert Spencer escaped the fate that would have been inevitable with greater use of his eyes, but the limitations and materialism of his magnificent attempt at "syntheticising philosophy" are too evident to need reemphasis. The man who could not read German, could not synthetize "philosophy" in the nineteenth century. And a man could never have learned German and mastered German thought, who at the age of 83 could "read without spectacles."

Margaret Fuller Ossoli's literary work was but a suggestion of what she might have done had not eyestrain and its effects kept her neurologically and financially impoverished.

The youth who at 24 was a German professor of philology, who had so splendid an organization, physical and intellectual, as had Nietzsche, who was forced to give up that professorship in ten years because of suffering of eyes, head, and digestive organs, and who at the age of 45 was steadily and fatally driven into insanity by his ingravescent

atrocious eye defects coupled with love of knowledge, just at the time presbyopia was beginning its cruel exaggeration of misery,—such a man and such a fate is the very limit of the awful and the tragical. If a scamp of a Nordau says it was all due to Schopenhauer or to unmentionable causes, the answer comes quick that pessimism is the almost inevitable outcome of years of the torture, the denutrition, the drained life-power, and the disappointment due to an eyestrain so atrocious as that of Nietzsche.

The Professional Blunder. For twenty-five years the medical profession has had placed before it the evidences of the pathogenic results of eyestrain to the entire nervous and physiologic economy. The fact was first called to its attention in 1875 in a most reputable periodical and by a most trustworthy physician. There is no evidence in European literature, so far as I know, that any physician of England or of the continent has ever read this article, or the hundreds that have followed it, or cared a fig for its teaching. The stomach specialist has continued to treat the special organ as if its functional diseases had no relation to the general system. Biliousness, like a wandering and very ancient mariner, transfixes us with his glittering and yellow eyes, and lays his spell even upon the wedding guest of science; dyspepsia is drugged and studied, and headache is drugged and not studied. All the time spectacle-peddlers fill the land, ruined eyes and lives multiply, the patent medicine disgrace rules legislation, bitters grow more alcoholic, tons of headache powders are sold every year, and the carnival of eddyism and blatant quackery goes more wildly on. And much if not the most of it all is due to neglect of the physiology of the eye and of its reflex neuroses, and carelessness as to the functional diseases which depend upon eyestrain. The deadliest blow that can be given to quackery in and out of the profession, to the patent medicine and eddyistic humbugs is to prevent the dyspepsias, anemias, neurasthenias, and headaches which are caused by eyestrain, and whereon battens the multitudinous quack incarnadine.

Not the Genius alone but the Common Workman and Workwoman, should be in our mind. One is very likely to get a very distorted, or at least one-sided idea of the role of eyestrain in the world if he sees it only from observing its disastrous effects in the case of great literary and scientific minds. The symptoms and the kind of tragedy it brings to the mechanic and the mechanic's wife; to the sewing-woman, clerk, housewife; to the lonely and distant settlers far from cities and oculists; to the millions of school children and college students; to professional men and women of all kinds,—these are different calamities and they

present in each case a separate problem. The one fact common to high and low is that it morbidizes character, doubles suffering and personal burdens, lessens all productive capacity, depreciates the national valor and validity and wealth, and delays the advance of civilization. This last is its most evil effect, because every act and product of intellect is intermediated by vision.

Value to Nations and to Civilization of its Great Men. The most valuable products and assets of a nation are confessedly not its material things, not those measurable in financial terms; they are not discussed in its legislative halls, or much thought of by kings or presidents. Worth all of these things are the few literary and scientific geniuses that silently emerge in each century. How inestimably valuable were the men whose clinical lives we have hastily studied! And the amou ' and character of their intellectual product was limited and qualified by their bad health. Of their atrocious sufferings their contemporaries were incurious, and to them indifferent. The pathos and pity of it is appalling whether we think of it as a personal matter or from the standpoint of the progress of civilization. How narrowly each escaped absolute failure to deliver his message, how fine the line between utter loss and the saving of even the wreckage; and there is added poignancy when one considers that it was precisely the act of doing their intellectual tasks that brought the suffering, that crippled and morbidized the results, and that brought the danger of absolute failure itself.

We must also remember that not these few only were they that were lost or ruined, or morbidized. By the very nature of the cases, in the vast majority of instances, the records are wanting from which to gather knowledge of the losses or hints of the failures. With only a little search twelve startling examples have been found. The evidence that has come to us in these twelve examples is too indefinite and unscientific as to details, although it leaves no doubt as to the fundamental and essential pathogenic factor. Had we but data concerning de Maupassant and his insanity, if we knew the facts about Swift, Chatterton, Keats and a multitude of budding or blasted geniuses, many of whose names are unknown to us. For, wherever intellect has sought the solution of the mysteries of our life, wherever reason has attempted to lessen the world's load of suffering and ignorance, there may the eyes have been defective, upon which all results depended, all results to the worker and to the aftercoming workers, who we are. And so it comes to this that the geniuses, the instruments and makers of civilization, depend at last on the medical profession. At last and late we are rising to the measure of our opportunity and our duty.

THE INTER-RELATIONS OF DIABETES AND OTHER CONSTITUTIONAL STATES.*

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THE great error dominating conceptions of disease in their clinical and therapeutic aspects is that which fixes upon one symptom as a test of disease rather than the symptom-complex. Perhaps in no disorder is this better illustrated than in diabetes. The predominant symptom of diabetes is glycosuria. This condition may not only be an expression of many diseases but may be at times merely the result of excess in carbo-hydrates. Glycosuria occurs in all the neuroses not as a complication but as an expression of metabolic instability resultant on nerve disturbance. The vaso-motor nerves of the liver have their origin in the floor of the fourth ventricle and pass through the cervical and upper dorsal regions of the spinal cord the rami communicating opposite the fourth or fifth dorsal vertibræ to join the sympathetic and enter the liver as the hepatic plexus. Injury to the fibres at their origin in the fourth ventricle, in any part of the spinal cord, or of the sympathetic itself is followed by glycosuria. Conditions such as express themselves in glycosuria and allied sub-oxidations readily occur in the neuroses. Hysteria may be complicated for instance with glycosuria of transitory or prolonged duration which may eventuate in coma of an apparently diabetic type but which disappears with the disappearance of the most marked hysteric symptoms. The great neuroses, paretic dementia, locomotor ataxia and epilepsy, occasionally display temporary glycosuria.

Delirium tremens and the confusional insanities may at times have a temporary glycosuria. Every one of the febrile conditions may be glycosuric. Conditions in which respiration is involved are often accompanied by glycosuria. Pregnancy being a condition in which there is over nutrition, faulty elimination and resultant imperfect oxidation is often attended by glycosuria. The patient may be glycosuric only during pregnancies. Glycosuria may come on during pregnancy and be present during the period only, or it my occur immediately after pregnancy is terminated and may recur sometime after and may remain for a long time after pregnancy and then suddenly disappear.

Gout and insanity of the auto-toxic types frequently alternate with glycosuria. During the mental disease, or during the gout glycosuria is absent and its re-appearance is an indication of recovery while its disappearance is the precusor of an attack. What is true of glycosuria is likewise true of the states allied to it, acetonuria, etc. Every one of the acids from sugar metamorphoses, may be formed in the urine of depressed mental states and after the apoplectiform and epileptiform

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attacks of paretic dementia, the crices of locomotor ataxia and the status epilepticus.

Independently of the symptom-complex diabetes, there are states of which glycosuria is a symptom consequent on suboxidation which they produce that are temporary in character and have not the permanency characteristic of the disease diabetes. Many neuroses, however, are an expression of the suboxidation states constituting diabetes. In all of these glycosuria may disappear just previous to cerebral complications. The disappearance of glycosuria very often is an expression of imperfect elimination through renal insufficiency rather than a disappearance of sugar from the system. In a diabetic in a severe state of hyperglycemia sugar may be absent from the urine, yet the patient may pass into acidosis with resultant coma. Neurotic manifestations of diabetes comprise lesions of motility, of general and special sensibility of the intelligence and of trophic functions. Among the most marked motor manifestations are fatigue, lassitude, and deprivation of muscular energy which does not depend upon muscular weakness pure and simple, but may strongly suggest a medulla affection. It is not always well marked. It may suddenly disappear to return as suddenly and may first occur in consequence of a slight traumatism. Apoplexy with complete coma may occur, followed by hemiplegia, recovery from which may be rapid and complete.

Sometimes there is sudden loss of consciousness which disappears so rapidly without resulting paralysis as to suggest epileptic states. Vertigo sometimes occurs alone, and sometimes precedes paralysis. Paralytic symptoms occur without loss of consciousness. Hemiplegia may be attended by very bizarre phenomena. In one case a left hemiplegia was accompanied by a monoplegia of the right eyelids. Monoplegias are very frequent in diabetes and are apt to be extremely transitory. Paralysis of the right arm and face, ptosis, pupil dilatation, strabismus, and hesitancy in speech may follow glycosuria. While speech disorders are generally due to buccal dryness, yet true aphasia occurs, and aphonia from laryngeal paralysis is far from exceptional.

Imperfect muscular co-ordination in the dark attended by formication in the extremities may lead to a suspicion of locomotor ataxia. Cramps of the akinesia algera type frequently attack the lower extremities, especially at night and play an important part in the production of insomnia, being often the first indication of cerebral circulatory disturbance and may be precusors of serious complications. Convulsions may be associated with coma, or may accompany paralytic phenomena. At times they present the monoplegic epileptic character and alternate with transitory paralysis of the same side.

Diabetic vertigo often assumes an epileptoid character. Asthma, exopthalmic goitre, and other respiratory neuroses are not infrequently temporary expressions of diabetes. Underneath them and many diabetic neurotic states, lies the "air hunger" of the tissues, which is simply their expression of the need of oxygenation.

Diabetic absorption of oxygen as Voit, Peltenkoffer and others have shown, is much less than the normal and decreases till towards the end of the disease when it is hardly half the normal quantity. Carbon dioxide exhaled is proportionally reduced. This oxygen decrease Sajous ascribes with much plausibility, to supra renal disorder. Increased supra renal activity, as Croftan has shown can so augment the ferment producing power of the pancreas, as to greatly increase sugar elimination through increase of the amylolytic ferment supplied by the pancreas which converts the liver glycogen into dextrose.

Herein lies the explanation of neuropathic glycosuria and of diabetic neuropathics. In the first, the cause is primarily in the cerebro-spinal system. In the second the hepato-pancreatic-splenic-adrenal system is first affected, and the resulting toxic products because of disordered oxidation, cause the nervous symptoms.

The most furibund symptom of diabetes is coma. Under this title are included many conditions varying from mental depression through apathy to stuporous states with or without absorption in agonizing dreams or delusions. One of the most distressing conditions of partial stupor is that attended by psychic nausea where the nausea conception is intense but unattended by gastric disorder. Cases of this type often occur just after seeming coma, the patient refusing treatment because he believes his stomach is too squeamish to retain medicine. As the mental state is attended with loss of determining will power, like most depressional, stuporous or apathetic conditions, this psychic nausea and its effects are readily overcome by large doses of a saturated solution of sodium bicarbonate. Tablets should not be given as they irritate the throat thereby increasing the strength of the psychic nausea.

Nearly all the mental features of coma and its allies just mentioned, centre, like all depressional mental states attended by acidosis, around the medulla oblongata.

This is the origin of the cardiac, pulmonary and gastric instabilities which occasion such alarming features in the comatose and apathetic conditions of diabetes. The starting point of these disorders is central not local. The cerebral centres of the lungs, heart and stomach being disturbed, local excito-motor ganglia have undue play and become exhausted. Resultant local disorders underlie the diabetic endocarditis,

diabetic myocarditis, diabetic phthisis, diabetic gastritis, etc. Diabetic skin and diabetic tissues are, moreover, predisposed to microbic attack.

The etiologic moment of coma, comatose and stuporous states consists first of the condition of the patient at the time of the attack, and depends largely upon the condition of emunctories. The kidneys may be in good shape themselves, yet because the intestines are acting imperfectly with fæcal resorption, the kidneys are overworked which is shown by the presence of an excess of indican and urea in the urine. Secondary to this occurs renal insufficiency with resultant acidosis from retention of imperfectly oxidized sugar products.

Given the muscular changes which produce B-hydroxybutyric acid, acidosis production with decreased elimination is intensified. The skin in diabetics is very deficient in eliminative power, which adds to the work of the kidneys. The lungs cannot quite supply the oxygen ordinarily needed, not to speak of the increased amount required for diabetes, much less can they oxidize products unphysiologically eliminated through them. The lack of oxygen increases depression and apathy, which in turn decreases cardiac and lung energy. The liver has its nerve energy lessened, yet has increased poison destroying work thrown upon it. The diabetic, when elimination is lessened, is in a very serious and unstable condition which the slightest shock will jar into coma, a comatose state, and epileptiform or apoplectiform convulsion. The premonition of these is generally given by lessening polyuria, suppression of urine, or by the finding first of cylindroid, then hyaline or granular casts. Albuminuria *per se* often means merely the urethral or prostatic irritations of diabetes. These as predisposing to microbic attack are of serious augury, but not as to coma, etc.

The sudden disappearance of sugar or sugar acids with increased casts is ominous of renal insufficiency and resultant toxemic cerebral states.

Another part of the etiologic moment is the condition of the arteries, whether due to diabetes, age, lues, rheumatism, gout, the exanthemata or mental or school overstrain.

Apoplectic extravasations during the coma, epileptiform or apoplectiform states may here lead to permanent mental or nervous disorders.

Hereditary defect may show itself in the etiologic moment peculiarly at the periods of stress: 2 to 6, 12 to 14, 14 to 25, 45 to 55, and from 60 on, when the system is undergoing evolution or involution.

There are many eye, ear, nose, throat, gums, skin, and genito-urinary phenomena found in diabetes which bear one of these relationships to the disease. They are an outcome of diabetes and are modified by it, or modify it, and finally they may be mere coincidences.

The common erroneous assumption that morbid states occuring during a diathetic state are due to it, is peculiarly accepted as to diabetes. While there is more truth than usual in the assumption as regards diabetes, still treatment of these local conditions will often do as much to relieve diabetes as treatment of diabetes does to relieve them.

The so-called "reflex" disorders exert their influence on the general constitution through continuous nerve irritation producing nerve waste and resultant autotoxemias, which, as has been shown are a peculiarly dangerous addition to the general burden of the diabetic. Treatment of all these conditions is required not only from the local standpoint, but likewise from the constitutional. This is especially true of the eye, ear, skin, gums, and genito-urinary system, whose disorders are certain to add to the atmosphere of worry, resultant nerve waste, and consequent toxic strain on the emunctories into which the diabetic is plunged.

Clinical study demonstrates beyond doubt that most cases of diabetes are at first expressions of nutritional and assimilational instability. In consequence of the over strain on the liver, adrenals, pancreas, spleen and kidneys, what were at first merely biochemic changes in these organs become permanent pathologic lesions, continuing constantly in excessive sugar manufacture without proper oxidation or elimination.

THE SIZE OF THE PUPIL AS AN AID TO DIAGNOSIS.*

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THE general practitioner, no less than the specialist, notices in almost every case brought before him for diagnosis, the *size*, the *shape*, and the *mobility* of the pupils.

First in regard to the size, they may be contracted or dilated, or they may be unequal, one being larger than the other.

Then in regard to the shape, they may, instead of being circular in outline, be oval or irregular in shape.

And in regard to the mobility, instead of reacting to the light (or other stimulus) they may be immovable or fixed.

Any of these changes suggest some abnormality, and it is the object of this paper first, to place on record the principal conditions in which these changes are seen; and, second, to assist in the interpretation of these changes.

In order to understand the subject, we must briefly glance at the anatomy of the iris, in so far as it has to do with the changes in the shape of the pupils. We will find that nature has provided a special

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means for the contraction of the pupil, and a special means for its dilatation.

In the structure of this very vascular curtain is to be found smooth muscle. The fibres of this muscular tissue are arranged in two directions.

First, we find them arranged in a circular manner around the pupillary edge, forming a sphincter of the pupil, and known by the name of the *sphincter pupillæ muscle.* The remaining fibres are disposed in a radiating manner, constituting the *dilatator pupillæ muscle.*

But another agency having to do with the size of the pupil is the blood supply. We know that the bulk of the iris is made of vessels, which lie like the spokes of a wheel, but close together. These vessels can be rapidly filled with blood, so rapidly that some authorities speak of the iris as belonging to the erectile tissues. The more the vessels are filled with blood the smaller the pupil is.

Now, without going into the nerve supply of the iris, it will be sufficient to say that the sphincter muscle is supplied by the 3rd cranial nerve, the dilator fibres by the sympathetic.

The size of the pupil, then, is affected in three ways. 1st, by the sphincter muscle of the iris, 2nd, by the dilator muscular fibres, 3rd, by the blood poured into the iris.

Anything which stimulates, or irritates, the 3rd nerve will cause the sphincter to contract, thereby lessening the size of the pupil. Anything which stimulates, or irritates, the sympathetic nerves will cause the radiating fibres to contract, thereby dilatating the pupil. If, however, we have stimulation of the 3rd nerve, with paralysis of the sympathetic, we will have extreme contraction (i.e. pin point pupils), while if we have stimulation of the sympathetic with paralysis of the 3rd, we will see extreme dilatation.

What abnormalities or diseases are indicated by these various changes of the pupils?

A. The patient may have the pupils evenly contracted (myosis). This may indicate:—1. Locomotor ataxia (tabes dorsalis); 2. meningitis and encephalitis (early stages); 3. inflammation of the cervical cord (chronic); 4. apoplexy of the pons; 5. epileptic fits (early); 6. uræmic poisoning; 7. tobacco amblyopia; 8. inflammation of the retina; 9. opium poisoning; 10. the use of myotics (eserine, etc.); 11. long continued use of the accommodation, as seen in watchmakers, etc. (occupation myosis).

B. Where we have the pupils evenly dilated (mydriases). This condition is found in:—1. Paralysis of both 3d nerves (as after diphtheria); 2. Intra-cranial tumors (late stages); 3. intra-cranial effusions

(pressure signs); 4. irritation of the cervical sympathetic; 5. acute inflammation of the cervical cord or its coverings; 6. as a premonitory sign of tabes dorsalis; 7. intestinal worms, or other irritant; 9. after epileptic fits; 11. cataracts; 12. amaurosis (blindness); 13. acute mania or melancholia; 14. the use of mydriatics.

C. But, again, we suppose a patient with unequal pupils; then we may suspect:—1. Tabes dorsalis; 2. general paralysis of the insane; 3. an unilateral lesion of the 3d, or sympathetic nerve; 4. diseased tooth; 5. pain in any branch of the 5th nerve; 6. old iritis; 7. inflammation of the right or left retina; aneurism of the carotid or aorta or tumor of the neck of the same side (in early stages this will produce irritation mydriases in late stages, paralytic, myosis); 8. use of a myotic, or mydriatic, in one eye; 9. an unilateral lesion of the brain; 10. a congenital condition; 11. Acute glaucoma (unilateral).

Supposing any one of the abnormalities spoken of is observed, we at once proceed to see whether the pupils will react to the stimulus of light. This is done by facing the patient to a window (if possible) covering both eyes with the hands, then removing each hand in turn. If there is no dilatation in the shade or contraction on exposure to light, the pupil is said to be immovable, or fixed. (By darkening the room, placing the patient with his back to a light, and reflecting the light first into, and then away from, the eye by a small mirror, we can decide doubtful cases of contraction and dilatation.) By the foregoing methods we may determine whether a pupil is fixed or movable.

I. *The pupils are contracted and fixed.* Then, taking up our list "A" we may exclude: Uræmic poisoning, meningitis and encephlatis (early stages), inflammation of the retina, tobacco amblyopia, occupation myosis. For in all these conditions the pupils are not fixed, the movements, although slight, may be seen.

In list "A" remains: Tabes dorsalis, the use of myotics, apoplectic effusions, epileptic fits. The contracted and fixed pupil may be present in any of these. But the apoplectic, or epileptic, condition, and opium poisoning are usually easily recognized, so that we have only to differentiate between tabes dorsalis and the use of myotics.

The history of the case would quickly enable us to decide, but the standard methods of examination for a case of tabes (the use of the convergence test, etc.), should be brought into use. Summing up list "A" it may be said that contracted and fixed pupils point, in the majority of instances, to a case of tabes dorsalis.

II. *But the pupils although contracted are movable.* The principle use of recognizing this condition is that it enables us to be almost sure that we have not before us a case of locomotor ataxia.

III. *The pupils are evenly dilated and fixed.* This is a rare condition. Looking at list "B" it may be stated that some movement of the pupils may be elicited in all the conditions named except in blindness (amaurosis), the use of mydriatics, and in complete paralysis of both 3d nerves.

IV. *The pupils are evenly dilated and movable.* Little need be added to what is said under the last heading. Of course it should be noted that in the last stages of intra-cranial tumors and effusions no movement of the pupils can be elicited.

V. *The pupils are uneven but fixed.* This condition almost surely points to one of two things—it is either locomotor ataxia, or it is general paralysis of the insane. The size or shape of the pupil will not help us to differentiate between these two affections, but the history will quickly clear the matter up. Looking over the remaining portion of list "C" it may be stated that in unilateral lesions of the 3rd, or the sympathetic nerves, the pupil of one eye would be found to react freely; and in affections of the 5th nerve both pupils would react, but the smaller one less freely than the larger. In old Iritis, care must be taken, for sometimes the adhesions are so extensive as almost to bind the iris to the lens, to a large extent preventing movement. In every doubtful case a drop of atropine solution should be used. This will solve the difficulty, for the pupil will dilate between the adhesions, thus giving a notched appearance to its edge. And unless we have a case of double iritis, the pupil of the other eye will react to light. In all the remaining affections of list "C" movement would be seen in one pupil.

VI. *The pupils are unequal but movable.* In this condition we would probably find the cause to be a painful tooth or irritation of some branch of the 5th nerve. But the important point here is the fact that this condition of the pupils renders it unlikely that either tabes dorsalis or general paralysis is present.

Summing up the whole matter it will be noticed that, in almost every section, reference is made to locomotor ataxy. One of the most important deductions therefore is, that in every case of abnormality of the pupils (unless the cause is othorwise apparent) it is our duty to examine for locomotor ataxy. If this rule were acted upon many a one of these cases would be recognized or discovered in its early stages. When we recollect that much success attends early treatment of tabes, but that comparatively little can be done if the case is not recognized until it has passed into the later stages, the importance of this rule becomes at once apparent.

CURRENT MEDICAL LITERATURE.

Conducted by A. J. MACKENZIE, B.A., M.B.

PARETIC DEMENTIA.

Dr. Neff, of the Eastern Asylum for the Insane, in the *Physician and Surgeon*, gives the result of his study of this subject in four hundred and fifty cases as follows:

(1) It would appear that the clinic syndrome of paretic dementia may be produced by several agents.

(2) An inherited tendency exists in a comparatively large number of cases and may be a strong predisposing agent.

(3) The percentage of syphilis in general paralysis is too considerable to be disregarded. In all probability it is an important element in the production of the disease.

(4) Other influences than syphilis may act and be productive of similar symptoms.

(5) The predilection of the disease to age, rest, occupation, et cetera, is as yet not clearly understood. It is probably referable to the idiosyncrasies of the disease.

(6) It seems probable that if an equal amount of study were given to other brain degenerations we would find the same variations in etiology.

THE PHYSIOLOGICAL DIFFERENCE BETWEEN THE TWO SIDES OF THE CHEST.

In the *British Medical Journal*, May 23rd, 1903, J. Edward Squire, of the Mount Vernon Hospital, gives the results of an investigation he has made in 58 cases—28 males and 30 females, who had healthy chests. The importance of a thorough and correct appreciation of these differences, not only in preventing a wrong diagnosis of a pathological condition, but even more so in avoiding classing as physiological what is really due to disease makes his conclusions of great value.

(1) In the majority of healthy persons but not in all, the physical signs elicited over the upper part of the right lung differ somewhat from those on the corresponding part of the left side.

(2) These differences consist in the following: (*a*) The percussion note is slightly less resonant and higher pitched on the right side; (*b*) the breath sounds are louder on the right side, and the expiratory por-

tion of the sound more marked; the character of the sound and the proportion between the length of the inspiratory and expiratory sounds is not modified in health; (*c*) the vocal resonance, especially in men is more marked on the right side: (*d*) vocal fremitus is more marked on the righs side.

(3) Of these differences the increase in the vocal fremitus is by far the most constant. Differences in the percussion note are only noted in half the cases examined.

(4) The differences, except in percussion, are not so much alterations in the character of the signs as modifications in transmission of the sounds.

(5) The modifications in the signs are apparently due to the direction and form of the main bronchus, which are not the same in the two lungs. The percussion note modification may possibly be influenced by the thicker covering of the right side of the chest, but is most probably also dependent upon the position and size of the bronchus.

JOHNS HOPKINS HOSPITAL BULLETIN.

The May number of this excellent publication contains a number of interesting reports. The first is by W. G. McCallum 'On the mechanism of absorption of granular materials from the peritoneum' in which the writer's investigation into the histological structure of the serous lining of the abdomen is described as follows:

"We have the peritoneal cavity lined by a complete layer of peculiar epithelial cells which lie on a basement membrane uniformly thin except where it overlies the lymphatic lacunæ in which position it is represented by a lattice work of fibrils separating the epethelium from the surface of the lymphatic. Approaching the peritoneum at these points are the oval sacs or lacunæ which are the absorbing terminals of the diaphragmatic lymphatics and which while possessed of a complete lining of endothelium are separated from the peritoneal cavity only by the loosely woven connective tissue and the peritoneal epithelium."

Absorption takes place for the most part through the peritoneum lining the diaphragm, being assisted largely by the pumping action of this structure in respiration as has been proven by experiment with pigmented solutions but even when this action is eliminated, the diaphragm is still found to be the part where much the greatest absorption takes place. The absorption of the pigment granules takes place through the intercellular spaces between the lining endothelial cells, and not through definite stomata, nor yet by the interposition of phagocytic cells.

Cabot and Locke report four cases from the Massachusetts General Hospital during the past year, in which, owing to the presence of a diastolic murmur, aortic regurgutation was suspected during life, but, at autopsy, normal aortic valves were found. The conclusions in the premises are as follows:

(1) Diastolic murmurs without organic valve lesions are not uncommon in connection with dilatation of the aorta, localized or diffused. (2) When the pleura and pericardium are adherent, owing to tuberculosis or other causes, diastolic murmurs are occasionally audible in the precordia. Such murmurs are notably affected by respiration and position; they are probably due, in most cases, to suction expulsion exerted by the heart upon portions of the lung adherent to the pericardium—"cardio-respiratory murmurs." (3) In cases of intense anæmia, when the red cells are reduced to or below 1,000,000 per Cu.MM., one occasionally hears diastolic murmurs not to be explained by permanent dilatation of the aortic ring nor as cardio-respiratory murmurs, and not due to a diastolic accentuation of a venous hum. The cause of these murmurs is obscure.

REMOVAL OF UTERUS IN DOUBLE PYOSALPINX.

Mann, in *American Gynecology*, July, gives as his opinion that in all cases of double pyosalpinx necessitating the removal of the ovaries and adnexa, the uterus should also be removed. He bases his judgment on the fact that it serves no useful purpose after such operation, that in all such cases it is infected and remaining is a source of irritation and danger, and that in acute cases its removal gives a free and valuable drainage.

Noble, in another article in this number, supports this view, claiming that his own results show a larger percentage of mortality; he also argues that there is less danger from hæmorrhage when the four great arterial trunks are ligated than when the uterus is left in position.

EDUCATION OF NURSES.

In the *Boston Medical and Surgical Journal*, June 18th, Dr. Denny, Brookline, Mass., calls attention to the inadequacy of the education at present provided for nurses in the hospitals' training schools owing to the extensive demands made on the energy of the pupil-nurse in the fulfilment of her practical duties. The lack of such education prevents her benefitting by the opportunities she has of seeing cases of all kinds, at least, until she has spent the greater part of her term of training, while the long hours and arduous employment, together with

the rather desultory and didactic manner of her teaching, make such education as she gets of little value. The writer looks for the solution in the establishment of educative institutions where the prospective nurse may spend a year or more in study of the various branches of science which are of service to her, and graduating from here receive appointment in a hospital just as members of the medical staff do. Doubtless both hospitals and nurses would benefit by such an arrangement.

SAWDUST AND FISH LIFE.

It has generally been held that the presence of sawdust in water is inimical to fish life, and both the Dominion and Provincial Governments have taken measures to prevent saw-mills depositing their refuse in streams, but recently the Dominion Fish Commissioner, Professor Prince, has claimed that no harm really results from sawdust. In view of this, a paper in the Kingston *Medical Quarterly* for April, by A. P. Knight, M.A, M.D., Professor of Animal Biology, Queen's University, will be found most interesting. The writer made a large number of experiments and investigations, and his conclusions are as follows :—

(1) Strong sawdust solutions, such as occur at the bottom of an aquarium, poison adult fish and fish fry through the agency of compounds dissolved out of the wood cells.

(2) The overlying water in such an aquarium does not at first kill fish. After about a week it does kill, but wholly through suffocation, the dissolved oxygen having all been used up.

(3) Bacteria multiply enormously throughout all parts of such an aquarium, and through oxidation change the poisonous extracts to harmless compounds. Mosquito larvæ live on the bacteria. No doubt, in natural pools, other aquatic insect larvæ live on bacteria also.

(4) Subsequent aération and sedimentation of sawdust water purify it, so that fish can live in it without injury.

(5) Since adult fish and black bass fry both refused to be driven into pine extracts in the bottom of an aquarium after they had experienced its poisonous effects, we may infer that fish would desert a river much polluted with sawdust, going down stream and into tributaries to escape from the disagreeable influence of sawdust extracts.

(6) No stream can be pronounced offhand as poisoned by sawdust extracts. Each stream must be studied by itself and the varying conditions must be thoroughly understood before a judgment can be pronounced. The chief things to be considered are, (1) The quantity of sawdust, and (2) the volume of water into which the sawdust is dis-

charged. Subordinate conditions are the rapidity or sluggishness of the stream, the amount of sunlight or shade, and the character of the water, whether from agricultural lands or primitive forests.

(7) Further observations along sawdust polluted streams and rivers of Canada are urgently needed before more definite conclusions can be reached.

TEMPORARY AND PERMANENT FILLINGS AS BARRIERS TO BACTERIA.

The *Dominion Dental Journal*, July, contains an interesting article by A. E. Webster, M.D., D.D.S, on this subject, reporting the results of a large number of experiments undertaken to determine to what extent the ordinary temporary and permanent fillings for teeth act as efficient barriers to the entrance of bacteria. The experiments were made with glass tubes, ¼ in. bore, filled with bouillon, the ends being stopped with the various fillings ordinarily used for teeth; when this was done the tubes were immersed in saliva and left there for varying periods. The conclusions as to temporary fillings are as follows: Gutta percha, temporary stopping, cement, cotton and sandarac, cotton vaseline and cement, are of no value to seal a cavity in a tooth for the prevention of infection from the oral cavity; but oxychloride of zinc is an efficient barrier. In permanent fillings, oxyphosphate cements, gutta percha, cotton, or any combination of these with each other, will not prevent the passage of moisture or bacteria. Oxychloride of zinc will resist the passage of bacteria for at least 60 days, but not moisture for that length of time. Some amalgams, if properly mixed and inserted, will resist the passage of bacteria, while others are useless. Many alveolar abscesses are doubtless due to infection in this way through supposedly efficient stoppings in pulpless teeth.

IS CASTRATION INDICATED FOR THE RELIEF OF PROSTATIC HYPERTROPHY?

In the May number of the *American Journal of Dermatology*, there is a symposuim on the subject of prostatic hypertrophy, consisting of answers given by a number of authorities in both America and Great Britain, to a series of questions propounded by the editor. Question No. 8 is as follows: Have you castrated for prostatic hypertrophy? How often and with what success? Of all the answers not one reports permanent benefit following the operation, the majority have never practised it and those who have done so report either no benefit or only temporary improvement.

THE GERMICIDAL ACTION OF ALCOHOL.

In the *Boston Medical and Surgical Journal*, May 21st. Harrington and Walker report the results of a series of experiments undertaken to determine the germicidal power of alcohol. Various strengths ranging from 15 per cent. to 99 per cent. were made use of, both with moist and dry bacteria belonging to the following classes, viz.: bac. coli. com. bac. pyocyan., staphylococcus pyogenes albus and aureus, bac typhosus, bac. diphtheria, bac. anthracis. Their conclusions are as follows:—

(1) Against dry bacteria, absolute alcohol and ordinary commercial alcohol are wholly devoid of bactericidal power, even with twenty-four hours' direct contact, and other preparations of alcohol containing more than 70 per cent., by volume, are weak in this regard, according to their content of alcohol,—the stronger in alcohol, the weaker in action.

(2) Against the commoner, non-sporing, pathogenic bacteria in a moist condition, any strength of alcohol above 40 per cent., by volume, is effective within five minutes, and certain preparations within one minute.

(3) Alcohol of less than 40 per cent. strength is too slow in action or too uncertain in results against pathogenic bacteria, whether moist or dry.

(4) The most effective dilutions of alcohol against the strongly resistant (non-sporing) bacteria, such as the pus organisms, in the dry state, are those containing from 60 to 70 per cent., by volume, which strengths are equally efficient against the same organisims in a moist condition.

(5) Unless the bacterial envelope contains a certain amount of moisture, it is impervious to strong alcohol; but dried bacteria, when brought into contact with dilute alcohol containing from 30 to 60 per cent. of water by volume, will absorb the necessary amount of water therefrom very quickly, and then the alcohol itself can reach the cell protoplasm and destroy it.

(6) The stronger preparations of alcohol possess no advantage over 60 to 70 per cent. preparations, even when the bacteria are moist; therefore, and since they are inert against dry bacteria, they should not be employed at all as a means of securing an aseptic condition of the skin.

(7) Provided the skin bacteria in the deeper parts can be brought into contact with disinfectants, alcohol of 60 to 70 per cent. strength may be depended upon usually, but not always, to destroy them within five minutes.

DISEASES OF THE EYE, EAR, NOSE AND THROAT.

Conducted by PERRY G. GOLDSMITH, M.D., Belleville, Fellow of the British Laryngological, Rhinological and Otological Society.

THE UPPER RESPIRATORY TRACT AS A SOURCE OF SYSTEMATIC INFECTIONS.

Dr. de Haviland Hall, at the recent meeting of the B. M. A., introduced this subject. He points out that the symptoms of measles, influenza and whooping cough clearly indicate that the virus of these diseases enters the system through the upper respiratory tract. Cases were cited, showing that enteric fever may start in the larynx; while diphtheria is essentially a local disease at its commencement, the specific bacilli entering at the nose, naso-pharynx, pharynx (*the usual situation*), or larynx. The secondary symptoms are due to the absorption of the toxines. Scarlet fever may have its origin from a wound of the nasal mucous membrane. He is of the opinion that there is much to be said in favor of the view that tonsillitis is a primary infective disease of the lacunæ; and that rheumatic fever is a secondary disease, arising from the absorption of the microbes, or their products, into the system. He emphasizes the importance of careful treatment of even slight tonsillar affections in view of the danger of systematic infection. Septicæmia, pyæmia and erysipelas are shown to be diseases which certainly enter the system in many cases through the upper respiratory tract. The occurrence of primary tuberculosis of the nose, pharnyx and larynx and the recognition of latent tuberculosisof the tonsils, both faucial and pharyngeal, point to the possibliity of the tubercle bacillus entering the system via. the upper respiratory tract. Syphlitic infection through primary sores in the nose, naso-pharynx, pharynx and larynx are mentioned.

Dr. Jobson Horne deals mainly with three points; Firstly, that the upper respiratory tract is more frequently than is generally stated the site of primary infection for systemic diseases other than those commonly assigned to it, and that a more routine examination of the region should be made in the clinical investigation of diseases of obscure origin; secondly, that the region is not only a site of infection, but is also a factor in modifying, or arresting infection; lastly, the surgical treatment of such diseases is considered with reference to the foregoing. By way of illustrating these points, the following diseases are more especially mentioned: Infective endocarditis, tuberculosis, lymphadenomal (Hodgkins' disease), and lympho sarcoma.—*Jour. Laryngology.*

EXPECTORATION OF A TOOTH THIRTEEN MONTHS AFTER INHALATION INTO THE LUNGS.

W. E. Dickson relates an interesting case in the *Lancet*, February 28. The patient had twelve stumps removed from the upper jaw on two consecutive days, under gas. After the second day's operation, the patient had a slight feeling of uneasiness behind the sternum. A month later he developed influenza, and suffered from aphonia for some days. Two months later he had an attack of pleurisy. Following this he was much troubled with cough, expectoration, hæmoptysis, and, in short, many of the symptoms of phthisis for which he was treated, though tubercle bacilli were not found in the sputum. Finally, while lying quietly in bed, he felt a "sort of obstruction" in the chest, and coughed up a large mouthful of red-clotted blood. In this he felt something hard, which proved to be the fang of an upper molar.

DIONINE IN CORNEAL AND CONJUNCTIVAL DISEASES.

At the January meeting of the San Francisco Eye, Ear and Throat Surgeons, the subject of cocaine poisoning was discussed. This lead to some remarks by Dr. Redmond Payne, *Opthalmic Record*, on the use of dionine. This preparation is a derivation of morphine, and has been used successfully as a substitute both for it and codeine as a general analgesic, the claim being that it has narcotic and sedative effects, without their disadvantages. In diseases of cornea and conjunctiva 4 and 7 per cent. solutions are used. Cocaine, hitherto the only remedy we have had for pain in these cases, if used continuously, produces a bad effect on the epithelium, thereby affecting nutritive process and repair. Moreover, cocaine produces only a temporary anæsthetic effect. Dionine, on the contrary, produces an analgesic effect lasting from 24 to 72 hours, and it has the additional advantage that it aids repair in cases of loss of epithelium, hastening the absorption of exudations. It is said to be contra-indicated in old people with arterio-sclerosis. It is a valuable analgesic but in no sense will it be satisfactory as a local anæsthetic.

A CASE OF LARYNGEAL FISTULA.

At the May meeting of the British Laryngological, Rhinological, and Otological Association, Dr. Kelson showed a case of laryngeal fistula the size of a florin, resulting from a cut throat six months previously. The wound had been made through the base of the epiglottis, just above the ventricular bands, which together with the vocal cords, were freely exposed. The patient was in fair health, but could only speak in an indistinct whisper, and was fed by means of a tube through the wound.

PROVINCE OF QUEBEC NEWS.

Conducted by MALCOLM MACKAY, B.A., M.D., Montreal.

The medical schools are again beginning to show signs of activity after the summer vacation, and by the time this is in press the session's work will be well commenced. The registrar at McGill University reports that the students are registering early, and that there are prospects of a large freshman year, notwithstanding the fact that the standard of the matriculation examination has been raised by the introduction of physics and chemistry. A number of changes and additions have been made to the teaching staff of the College. Dr. J. G. McCarthy has been appointed assistant professor in anatomy; Dr. J. G. Halsey, assistant professor in pharmacology; Dr. R. A. Kerry, lecturer in pharmacology; Dr S. R. Mackenzie, lecturer in clinical medicine; Dr. John McCrae, lecturer in pathology; Dr. D. R. Shirres lecturer in neuropathology and Dr. D. D. McTaggart, lecturer in medico-legal pathology. To the list of demonstrators have been added Drs. C. K. P. Henry and H. R. Pennoyer, assistant demonstrators in anatomy; Drs. W. L. Barlow and C. B. Keenan, assistant demonstrators of clinical surgery; Drs. G. K. Gunimer and W. H. Jamieson, assistant demonstrators in laryngology; Dr. D. Patrick, assistant demonstrator in gynæcology, and Drs. B. W. D. Gillies and C. A. Peters, assistant demonstrators in clinical medicine. Dr. H. Wolferston Thomas has resigned his fellowship in pathology to accept an offer from the School of tropical Medicine in Liverpool.

At Bishop's College, Dr. Deeks has resigned his lectureship and Dr. Hebbert has been added to the department of anatomy.

On September 27th, at Laval University, Quebec, the Provincial Medical Board of the College of Physicians and Surgeons of the Province of Quebec, held the examinations for admission to the study of medicine and on September 29th there met the credentials and examining committee for license, the semi-annual meeting of the Board being held on the thirtieth of September.

The Jeffery Hale Hospital, Quebec, has retained Dr. Carter as superintendent for another year. The hospital has recently been equipped with a large static machine and x-ray apparatus of the most approved pattern. The results obtained have been excellent, and the

instrument has proved a valuable addition in both medical and surgical departments. The staff has had a very busy summer owing to the large number of sailors seeking treatment at the institution. The prevalence of trachoma among a certain class of the immigrants has been so great that a special ward has been required continuously throughout the summer months for these cases.

At the regular meeting of the St. Francis Medical Association at Sherbrooke a motion was carried favouring the reduction of the board of governors in the College of Physicians and Surgeons from 43 to 25, the reduction to be from the representatives of the various universities of the Province. At present each university is entitled to have two members on the board. The following officers were elected: President, Dr. L. C. Bachand, Sherbrooke; first Vice-President, Dr. J. McCabe, Windsor Mills; second Vice President, Dr. A. G. Beique, Magog; Secretary, F. A. Gadbois, Sherbrooke; Asst. Sec., Dr. E. J. Williams, Sherbrooke; Council, Drs. Farwell, Austin and Cameron, Sherbrooke.

There is every prospect that the work in connection with the new children's hospital at Montreal will be commenced shortly. Temporary accommodation is being sought for at present, in order that the general hospitals of the city may be relieved of a number of chronic cases. The substantial grant bequeathed by the late Mr. James Cooper has insured the early completion of the new building, which has been planned for the accommodation of twenty patients. Two wards containing seven beds each, and six rooms with one bed each, will be placed on the main floor which will also have two large veranbahs, while the second floor will contain a large solarium and an operating room. The administration department will be on the ground floor together with the nurses' dining-room.

There were about 800 medical students in attendance at McGill, Laval and Bishops Medical Colleges last session. It is expected that the number will be considerably larger this session. The facilities for study have, within recent years, been greatly improved. The opportunities for clinical study are exceptionally good. The Royal Victoria has accommodation for 300 patients; the Montreal General Hospital, for 250; The Hotel Dieu, for 250; and the Notre Dame, for 150. In addition to the above, there are some special hospitals and a maternity hospital.

The sessional expenses amount to some $400. The fees at McGill are $125; board for the session of eight months is about $160; and books, special fees, and incidental outlays will be about $125.

MEDICAL SOCIETIES AND GATHERINGS.

THE CANADIAN MEDICAL ASSOCIATION.

Tuesday, 25th August.

The 36th annual meeting of the Canadian Medical Association was held in London, Ont., August 25th, 26th, 27th and 28th.

The President, Dr. Moorhouse, opened the meeting. The secretary, Dr. George Elliott, read the annual report. The previous meeting was held in Montreal, September, 16, 17, 18 and 19, 1902. When there were 329 in attendance, of whom 113 were new members. Dr. George Hodge, of London, reported for the committee on business:

The attendance at this meeting was very gratifying, nearly three hundred registering, and was the second largest meeting in the history of the Association. The meetings were held in the London Normal School, which is admirably adapted for such a gathering.

In the museum of pathology there was an interesting an instructive exhibit of gross and microscopic specimens.

THE SURGICAL TREATMENT OF HALLUX VALGUS AND BUNION.

James Newell, M.D., of Watford, remarked in his paper that the term Hallux Valgus implies abduction of the great toe, the extent varying, but usually being marked. By bunion is meant the swelling and hypertrophy of the tissues over the internal aspect of the metatarso-phalangeal articulation of the great toe; and is extended so as to include the hypertrophied head of the metatarsal bone, and the overgrown base of the first phalanx. The usual cause is ill-fitting boots.

The head of the first metatarsal bone is uncovered and there is an outward dislocation of the base of the phalanx, causing swelling and hypertrophy of the tissues and often a false bursa. The extensor propius pollicis tendon is displaced outward.

Palliative treatment is not followed by permanent benefit. It includes straight shoes, roomy at the toes; a sock with a finger for great toe; a wad of cotton between the toes; and various mechanical contrivances.

In the radical operation there should be thorough asepsis. An incision, two to three inches long, is made on the inner side of the big toe with its centre over the bunion. Excise the false bursa, if present, without allowing the escape of its contents. Deepen the incision and

separate the tissues from the bone. Open the joint fully, dividing the ligaments, and turn the great toe outward, exposing the head of the metatarsal bone. Insert a metacarpal saw and divide the bone just behind the articular cartilage, sawing through obliquely from above downwards and backwards. With the bone forceps trim off the sharp edges and remove any exostoses. Wash out the wound and stitch with silk-worm gut. Place a pad of cotton between the great and second toes and apply a sheet-iron splint on the sole, with a piece turned up between the same two toes. Remove the stitches in ten days and begin passive motion in two or three weeks. Remove the splint at the end of a month. The final result of this operation leaves nothing to be desired.

Inguinal Hernia of Undeveloped Uterus.

Dr. R. Ferguson, London, presented a specimen of inguinal hernia of the undeveloped uterus and appendages. The patient, Mrs. A. B., 32 years of age, married six years, consulted him on March 20th for violent attacks of temporal headache, lasting 24 hours and accompanied by pain and vomiting, recurring every four to six weeks. The health between the attacks was perfect. There were no subjective pelvic symptoms noticed. At seven years of age an inguinal hernia of the left side occurred, which disappeared on lying down. The vagina was, on examination, found to be a *cul-de-sac*, the cervix being absent. By bi-manual examination the uterus and appendages appeared absent, but a tumor was felt on the left side.

A median incision was made, but the uterus and appendages could not be seen. This was closed and an incision made over the tumor. In the sac were found the ovaries and imperfectly developed uterus. The pedicle was ligated and transfixed, the base returned to the pelvic cavity, and the operation completed as an ordinary Bassini. The recovery was complete and the headaches ceased. The mammæ and labia were normal.

Post-Nasal Discharges.

Perry G. Goldsmith, Belleville, read a paper on the causes and treatment of post-nasal discharge. This paper will appear in a future issue.

The Address in Medicine.

Dr. H. A. McCallum, London, gave the address in medicine. He chose for his subject "Lymphatic Circulation in Modern Medicine." See page 114 for this address.

Division into Sections.

Dr. A. B. Atherton, of Fredericton, N.B., was appointed chairnan of the Surgical Section, and Dr. Bruce Smith, of Brockville, chairman of the Medical Section.

Medical Section.

DISSEMINATED SCLEROSIS.

Dr. Hodge, (London), presented a case of disseminated sclerosis for examination. The patient was 22 years of age. In August, 1898, after a long bicycle ride, fell into the water. He was seen in October, when there were found an apical systolic murmur, loss of knee-jerk, legs weak, and brought down with a stamp. In May, 1899, he was stronger, knee-jerks were present, but the hands were numb. In June, 1899, the walking was improved, and could ride his bicycle, pain, temperature and muscular sensation normal; no inco-ordination. Improvement continued, until July, 1901, when he had difficulty in walking, increased knee-jerks, but no ankle-clonus, or muscular wasting. The sensory functions were normal, but he was constipated; and there was hesitancy in micturition. Feb., 1903, he was unable to stand alone, knee-jerks increased, as were the supinator and triceps jerks. Babinski's sign was present, speech thickened, but there was no ankle-clonus, no nystagmus, nor cranial nerve disturbance. Aug., 1903, the symptoms remained unchanged.

A second case was presented for diagnosis. The patient, aged 60, female, about ten years ago complained of feeling old, and noticed that she was continually dropping things. She had numbness of the soles of the feet, which still persists. An examination reveals the following conditions: grasp weak, left arm and leg weaker than right, supinator jerk increased on both sides, triceps jerk increased, exaggerated knee-jerk. No ankle-clonus and no cranial nerve involvement.

TREATMENT OF TYPHOID FEVER.

Dr. W. P. Caven, Toronto, opened the discussion, and divided his treatment into dietetic and medicinal.

(*A*) *Dietetic.* Milk is the standby. It is theoretically ideal and clinically the best. It may be diluted with vichy or lime water, or flavored with tea or coffee. Peptonized, it may be of service. The amount required is three to four pints in the twenty-four hours, given every two or three hours, with longer intervals at night, or in mild cases. To limit the destruction of body proteids, he believed that a certain amount of carbohydrates and fats were necessary, given as mucilaginous drink of oat-meal or tapioca; and albumin-water flavored with lemon or orange juice. He advised drinking plenty of plain water. Alcohol is required in cases where systemic weakness is present, with dry tongue, subsultus tendinum and marked insomnia.

(*B*) *Medicinal.* (1) Prophylactic. He quoted statistics, proving the good results obtained from artificial immunity, as shown by the results in the South African war.

(2) Antipyretics. The use of drugs is becoming less common. He believed in the Brandt method, as it not only reduced temperature but acted as a general tonic. It was limited to hospital work and selected cases; and was contra-indicated in myocarditis, pericarditis, intestinal hæmorrhage and in old people. In all cases, he used tepid sponging morning and evening; and, in extreme cases of high temperature, the cold pack or tub.

(3) Antiseptics. Calomel was not a specific, but it limits microbial growths and minimizes toxic absorption. Salol and B. napthol are useful.

For intestinal hæmorrhage, he found morphia useful, and intercellular, or intravenous, injections of normal saline solution were often helpful. In some cases, he thought gelatine solution could be used with benefit. For tympantis there were two remedies: Turpentine, m.x., in repeated doses, and asafœtida, used as an enema. He had seen relief by the rectal tube.

Dr. J. Herald, Kingston, continued the discussion. He stated that there was no specific treatment, and the disease must be guided rather than cured. He had obtained good results from hydrotherapy, but it sometimes caused shock. In neurotic cases, he sponges with dilute alcohol, which is followed by fanning to hasten evaporation.

Milk was his standby, but he gives other easily digested foods, as extracts of beef, unless in cases of severe diarrhœa.

His medicinal treatment was mainly symptomatic. In tympanites, he used turpentine externally, by the mouth or by the rectum; or subgallate of bismuth, in ten grain doses.

He would avoid alcohol at the beginning, but believes, at times, it is the best drug. Indications for it are a dry brown tongue, a low muttering delirium, and a failing heart. In hæmorrhage, he enjoined absolute rest, mental and physical, the administration of morphia hypodermically and the application of an ice-pack over the region of Peyer's patches.

Dr. J. Hunter, Toronto, related cases where high rectal enemata of saline solution were successful in controlling high temperature.

Dr. H. A. McCallum, London, believed in the cold bath treatment, accompanied with friction. He used a modified form of tubbing by placing a rubber sheet on the bed and pouring water over the patient. He believed in purgation during the first ten days, and the use of strychnia, given throughout the attack, to whip up the vital activities.

Dr. Caven closed the discussion by warning against the cold tub in certain cases.

Intoxication in Appendicitis.

Dr. E. Hornibrook, Cherokee, Iowa, took for his text the above subject. The paper appeared in our September issue.

Dr. DeWitt, of Wolfville Nova Scotia, in discussion said that he used enemas of salines or boracic acid, and calomel or olive oil internally. He believed that intoxication played a great part in appendicitis.

Dr. Hornibrook closed the discussion by saying that appendicitis was neither a medical nor a surgical disease, and that cases, going on to perforation and gangrene, could not be anticipated.

The Size of the Pupil as an Aid to Diagnosis.

Dr. J. T. Duncan, Toronto, read a paper on the above subject, which appears in this issue of The Canada Lancet, page 151.

The Physiological Generative Cycle of Woman.

Dr. Jennie Drennan, St. Thomas, read a paper on this subject. She stated that adaptation and heredity are the two factors which cause the changes wrought by evolution. If the environment be a good one, the adaptation to it improves the animal; and it is wise that the results of such adaptation be handed down. The physiological generative cycle is comprised of three factors, ovulation, pregnancy and lactation, which follow in physiological sequence. This is the natural order in mammalia, but in the human female it is accompanied by a lesser cycle, a monthly one, ovulation and menstruation. This lesser cycle is a pathological condition due to the habits of civilization. Every menstruation is a disappointed pregnancy, and it does not occur in other forms of mammals, except in a few anthropoid apes living in captivity. As the larger cycle of ovulation, pregnancy and lactation would occupy about three years, we find that in primitive races families are never large.

Diseases of the Nose and Throat.

Dr. J. Hunter, Toronto, read a paper entitled "The Medical Treatment of Diseases of the Nose and Throat."

He believed in adapting the same principles of treatment as in other forms of disease. It was imperative to examine the patient carefully. Acute and chronic inflammation were the most common conditions met with. As regards general treatment, we should endeavor to remove morbid products by diet and elimination. He advised a cold bath in the morning with brisk rubbing, followed by some simple form of gymnastic

exercise. Sunshine and pure air are of great service. Locally we should endeavor to remove morbid conditions and secretions by the nasal douche, first making sure that there is no obstruction to return flow, then holding vessel on level with nostril and gradually raising it a few inches. He used an alkaline solution of potassium or sodium bicarbonate and astringents as Listerine or hydrastis. After cleansing the field, the application of chromic acid or galvano-cautery was sometimes useful. He insisted on regular treatment. In laryngeal cases, inhalation of medicinal vapors is valuable.

In discussing the paper, Dr. Price Brown, agreed that the general practitioner should pay more attention to the care of the nose and throat. He did not approve of the bath in all cases. Tonsillitis demands immediate elimination. Hay fever occurs in sedentary persons and he had found hard labor curative. He warned the profession against the frequent use of the electric cautery.

Surgical Sections.

Report of Two Cases of Hour-Glass Contraction of the Stomach.

H. Howitt, M.D., M.R.C.S., Guelph, referred to his statement made at the last meeting of the American Association of Obstetricians and Gynaecologists, that he believed that the time will come when operations on the stomach will become as frequent as they are now for appendicitis. This, he said, was still his belief. The rush after gold and our present economic conditions and methods of education was the cause of the great increase in the number of cases of stomach disease that now come under the care of the general practitioner.

The term dyspepsia, as used at present, is a generic one, and includes several affections which await a more perfect skill in diagnosis before the different conditions can be recognized.

Excluding tumors and all other diseases of the organ that can be diagnosed by touch, or by the symptoms as being due to organic changes, quite a percentage of the remainder are caused by gross changes in or about the stomach, which affect the function of the muscular coat. A cicatrix, a slight constriction, a perigastric band, or adhesion between the wall and adjacent parts may exist and do serious damage to this important function without being detected. Hence what may be called mechanical interference with the normal movements of the stomach plays a far more important part in gastric complications than is generally supposed. The chief of these causes is "gastric ulcer." According to Leube, from one-half to three-fourths of all recent cases of gastric ulcer can be cured in three to four weeks by judicious treatment. If not cured in

that time they were not curable by medical treatment alone. The speaker believed that, with few exceptions, cases where the "succusion splash" was present over a largish area four or five hours after taking food were subjects for surgical treatment. He expressed the hope that the time will not be far distant when the diagnosis and the surgical treatment of gastric ulcer will have developed so far that cancer, as secondary to ulcer will be considered a stigma on the profession in the community in which it occurs. Of the two cases which he reported of "hour-glass contraction of the stomach," one was complicated by an ulcer on the posterior wall, and the other by cancer. The previous history of each pointed to gastric ulcer.

CASE I. Miss J. S., aet 36, tall and emaciated; weight 120 lbs. intelligent and of pleasing address; family history good. Previous history—Until 23 years had excellent health. Thirteen years ago took, while fasting, a large dose of concentrated solution of Epsom salts; this was soon followed by gastric distress, with distention. This continued several weeks, and she vomited blood on one or two occasions. After this, seldom free from distress, and attacks became more frequent and severe; was treated in many ways, uterus curetted and ovariotomy advised. Most consistent symptoms during last three years were pain in epigastric region, great distention of stomach and distress in breathing, coming on after food. Vomiting was not prominent and, when stomach was empty, pain was not severe. During later months, every two or three days she had a gastric crisis, in which the stomach became greatly distended and pain very severe. Admitted to Guelph Hospital, July 29, 1901. Examination showed a tender spot a little below and to left of ensiform cartilage; deep pressure caused pain which radiated to back. "Succusion splash" present. She was put in bed on restricted diet. She would not consent to an operation at this time and shortly left the hospital. Aug. 17 she returned and was prepared for operation.

Operation: After lavage of the stomach, ether was administered. A medium incision was made from near ensiform cartilage to unbilicus; the stomach was brought as far out of the wound as possible. No adhesions were found; the pylorus was normal; and situated a little nearer the pylorus than the cardiac orifice was an organic, circular contraction of the organ. It was quite firm, about an inch and a quarter in width, with a diameter the size of a broom handle.

A peristaltic wave was noticed which moved from the cardiac end to near the stricture where it remained a few seconds, and then gradually relaxed. It never crossed over to the pyloric end.

Owing to the situation of the constriction, the absence of adhesions and the fact that there was no abnormal condition of the pylorus, gas-

troplasty was determined on. Through an incision in the pyloric pouch, it was ascertained that the orifice, connecting the two pouches, would hardly admit the point of little finger. The incision was extended transversely across the contracted part and, when completed, was five inches in length. A round ulcer was formed on the posterior wall of the cardiac portion close to the constriction. Its floor was scraped, edges pared and mucous membrane closed over it by fine catgut sutures. Now, opposite edges of incision were grasped at their middle, and these points separated as far as possible. Thus the direction of the incision was now at right angles to its former one; it was closed with three rows of fine silk sutures. The abdominal wound was closed without drainage.

She made an excellent complete recovery and left the hospital one month later. When last heard of she was in perfect health.

CASE II, R. M.—Presented all the symptoms of malignant obstruction of the pylorus.

An operation to relieve the conditions was decided on; and, on exposing the stomach, it was found to be divided into two pouches by a tight constriction, situated somewhat nearer the pyloric than the cardiac end. The contracted portion was hard and nodular, and several nodules were noticed in the wall of the organ and along the lesser curvature. A gastro-enterostomy was performed; the cardiac pouch being united to the jejunum. He made a good recovery, and in two weeks could take food by the mouth. He left the hospital in about a month, and until a week before his death, which occurred eleven months later, he was able to take an ordinary amount of food with considerable comfort.

Dr. A. H. Ferguson, of Chicago, and Dr. Hadley Williams, of London, took part in the discussion of the paper.

SURGICAL TREATMENT OF TYPHOID PERFORATION OF THE BOWEL.

Dr. J. Alex. Hutchison, Montreal, reported four cases, operated on in Montreal General Hospital up to May, 1902, with fatal result in all.

CASE V. Male. Age, 33. Alcoholic Ambulatory Typhoid. Admitted to hospital December 30th, 1902. On 12th day of disease temperature 104°. Perforation on 13th day. At 3 a.m. patient developed severe abdominal pain on right side with rapid fall of temperature and increased pulse rate, with vomiting and diarrhœa, tenderness and rigidity in right iliac fossa.

Operation within two hours. Free sero-purulent fluid and fæces found in the peritoneal cavity. A large ulcer found in ileum, near valve, involving nearly the whole circumference of the gut, with pinhole opening in centre.

Bacteriological examination showed mixed infection.

A few hours after the operation, abdominal symptoms had disappeared and, during following three weeks, the case ran a typical typhoid fever course, developing rose spots and enlarged spleen. Widal reaction present.

Operative technique. Ether was administered, and an oblique lateral incision was made. The ulcer was folded in and Lembert sutures of silk inserted; the peritoneal cavity irrigated with saline solution, and abdomen closed, drainage tube being left and clamped to retain saline solution within abdominal cavity.

Four or five ice bags were applied to the abdomen for first few days. Good recovery.

Dr. H. Meek, London, Dr. Powell, Dr. Olmsted, Dr. Secord, Dr. Atherton took part in the discussion.

Gunshot Wound of Upper Arm.

Dr. Hadley Williams, London, reported the case of a patient, age 22, who, on 20th November, 1901, received a lacerated wound of right upper arm from a breech loading gun, the muzzle being but a few inches from the inner side, midway between axilla and elbow. Examination, four months later, showed an un-united fracture of humerus, about centre, with 1½ in. shortening, a discharging sinus, and typical musculo-spinal paralysis. This paper will be published in an early issue.

Dr. J. Wishart, London, R. A. Powell, H. Howitt, A. H. Ferguson, A. B. Atherton, and E. R. Secord discussed the case.

Operation in Hip Joint Disease Without Shortening.

Dr. R. Preston Robinson, Ottawa, introduced this subject. In tubercular disease of the hip joint, with abcess formation, we may have involved the head of the femur, the great trochanter, the lesser trochanter, and the shaft.

Case I. Girl, 4½ years, tubercular family history. Had acute spinal meningitis in infancy, and manifestations of scrofula since. The usual symptoms were noted, September, 1902. Extension was used but in January, 1903, the limb was shortened, flexed, adducted and immovable, and a large abcess was present.

Operation, February 3rd, 1903. The incision on outer side, below great trochanter, released a pint of pus, and the dead bone was curetted from head, neck, shaft and acetabulum, taking care to preserve all the shreds of periosteum, and pulling it back over sound bone for ½ inch. This denuded half inch was excised. The leg was extended and the shreds of periosteum were stitched to periosteum, covering ileum. The

muscles and fibrous tissue were stitched with catgut. The wound was filled with gauze and allowed to granulate. The leg was extended and 15 lb. weight applied; extension was kept up for four months. Passive motion was begun in second week. The patient was able to walk on August 1st, the movement is perfect, and the shortening only $\frac{1}{8}$ inch. He attributes the good results to the formation of new bone by the periosteum.

CASE II. Female, age 17, tubercular diathesis; advanced symptoms of hip joint disease. Saw case October, 1902. Extension and systemic treatment failed. Incision, as in case I. Disease involved great trochanter, head, neck, and shaft. The capsule was opened, the head removed and the periosteum preserved as in case I. The treatment and result similar to case I. Photographs and skiographs were exhibited.

The principal points to emphasize are: (1) Thoroughly clean away diseased bone; (2) preserve periosteum and stitch it to margin of acetabulum; (3) stitch muscles and fibrous tissue over periosteum; (4) weight and extension for four months; (5) let wound granulate; (6) let patient sit up in bed in two weeks but not walk for six months.

Dr. James Newell, H. A. Ferguson, Chicago, discussed the paper.

General Evening Session.

PRESIDENT'S ADDRESS.

Dr. W. H. Moorhouse, London, delivered his presidential address. See September issue of THE CANADA LANCET.

EYESTRAIN AND THE LITERARY LIFE.

Geo. M. Gould, Philadelphia, read his paper on the above subject. See page 124.

THE OPEN AIR TREATMENT OF TUBERCULOSIS.

Dr. J. H. Elliott, Gravenhurst, delivered a very interesting lantern lecture on the open air treatment of tuberculosis. He described sanatoria in several different countries, and more particularly the one at Gravenhurst.

MUNICIPAL SANITARIA FOR CONSUMPTIVES.

A paper was read on "Municipal Sanatoria for Consumptives" by E. J. Barrick, Toronto.

Wednesday, 26th August.

Surgical Section.

The public operating theatre at the Victoria Hospital, was crowded by over one hundred physicians. Dr. A. H. Ferguson, of Chicago, first removed a cystic adenoma of thyroid gland in a woman, age 46. He

made a transverse incision, split the muscles vertically, and enucleated. Gauze was inserted on account of free oozing.

The next case was a left ingiunal hernia, on which he used his own method, demonstrating each step by explanatory remarks.

Dr. McGraw, Detroit, demonstrated his method of performing gastro-enterostomy by the elastic ligature on two cases of gastric carcinoma. Whereas, formerly, the needle and ligature were separate, they can now be obtained fastened together by an improved method, which assists materially its passage through the alimentary walls. He said that gastro-enterostomy was devoid of risk, and most successful as far as the operation was concerned, easy of performance and without loss of time. The deaths attributable to it were not due to the method, but on account of the fact that the patients came too late for treatment.

In one of the cases, the malignant disease had progressed too far for the ligature to be successfully placed.

At St. Joseph's Hospital. Dr. John Wishart performed a Halsted operation.

Unreduced Dislocation of Elbow.

Dr. John Wishart, of London, showed a case of unreduced dislocation of the elbow in a man, 19 years of age, who had been injured six weeks before coming under his notice. The arm at that time was in extension, and flexion was impossible. After various methods had been tried, including attempts at forcible reduction with pulleys, reduction was accomplished by open incision. The lower end of the humerus (supra-condyloid) was complicated by a fracture. He did not know whether this occurred at the time of the injury, or was due to attempts at reduction.

The arm was now in position and excellent movement was shown to have been obtained.

Dr. McGraw, of Detroit, Dr. Eccles, of London, and others spoke of the rarity of the operation and congratulated Dr. Wishart.

Malignant Tumor of Neck.

Dr. Hadley Williams, London, presented a man, age 62, from whom he removed, five weeks before, a large tumor of malignant growth from the neck, together with the entire sterno-mastoid muscle and three inches of the internal jugular vein. He then cleaned out the submaxillary triangle and tied the lingual artery preparatory to excising half the tongue. The patient had in no way suffered from excision of the vein, either during, or since the operation.

Tumor of Brain.

Dr. Wishart reported a case of brain tumor. Male, aet 67, abstainer, previous health good, active business life. Sept., 1901, fell on head at height of eight feet. Recovered in a week. Dec., 1901, had an attack of tremors and spasms, beginning in the thigh of left side and extending to leg. Attack lasted five minutes. Similar slight attack in Jan., 1902. April, 1902, had severe attack and whole left side convulsed. A less severe attack in Aug. There were attacks in Sept. and Oct., during which he lost consciousness, and mind did not recover. He became confined to bed and lost flesh. Nov. 3, 1902, saw patient in consultation. Speech was perfect, but memory deficient. Involuntary micturition, knee-jerk increase and ankle-clonus on left side, Babinsky's sign not present, pupils equal and respond to light, discs normal, no paralysis, headache or vomiting, but emaciation, pulse 89, temp. 99°, urine normal.

Operation. Right side of skull trephined over leg centre; the dura was incised and a tumor half an inch in diameter removed (psammoma). Recovery slow, but by Jan. 1, 1903, his mind was clear. Feb. 17, spasm of leg.

During summer, became weaker and suffered from constipation and insomnia. Aug. 11, unable to take food. Mind remained clear, but death took place Aug. 20, from inanition.

Alexander's Operation.

Dr. H. Meek, of London, gave his personal experiences with Alexander's Operation for Retroversion of the Uterus. He considered:— I. The class suitable for operation. II. The advantages of this over other methods of treatment, and III. Results.

Cases Suitable for Operation. (*a*) Simple, uncomplicated retroversion with free mobility of organs; (*b*) Some cases complicated by disease of appendages, non suppurative, and where adhesions are not too dense. Cases with much fixation of the parts or cases of suppurative disease are better treated by abdominal incision.

Advantages of Alexander's Operation. Treatment by pressary is simply palliative; it can never be worn comfortably for any length of time; it may become misplaced and cause ulceration of mucous membrane of vagina; it may be a factor in causing infection of uterus and appendages. Over the operation of ventro-suspension it has the advantage of less risk, as it has also over shortening the ligaments after abdominal section. It is also safer than shortening the ligaments through the vaginal route.

Results. No deaths in over 200 operations. In suitable cases there has been no recurrence of symptoms. In earlier cases and in some un-

suitable ones there was amelioration of the symptoms for a considerable period. In cases where pregnancy has taken place, there have been good recoveries and the trouble has not returned.

THROMBOSIS OF THE FEMORAL VEIN.

Dr. E. R. Secord, Brantford, reported an interesting case of double ingiunal hernia on which he had operated. The wounds remained aseptic throughout, but thrombosis of the saphenous vein appeared. This paper will appear in an early issue.

Medical Section.

THE COUNTRY DOCTOR.

D. J. S. Sprague, Stirling, read an interesting paper on this subject. It will appear in an early number.

Drs. Mitchell, of Toronto, Mann, of Renfrew, Mitchell, of Kilworth, Hunter, of Toronto, Butler, of Alma, Mich., participated in the discussion.

FRESH AIR VERSUS DISEASE.

Dr. G. E. DeWitt, Wolfville (Nova Scotia), spoke of the increased sanitation of the present day, brought about by the profession, and mentioned open air sanatoria for consumptives. Pure air is very essential to the sick. He said that it imparted vigor to the patient and stimulated the vital forces, so that the resisting power of the body destroyed the germs, for example tubercle bacilli; and is valuable, especially in convalescence from fevers and in some cases of rheumatism. He cited illustrative cases.

Sir James Grant congratulated Dr. DeWitt on the practical nature of his paper. Dr. Aylesworth, Collingwood, and Dr. Johnston, Toronto, also spoke on the subject.

INTER-RELATION OF DIABETES AND OTHER CONSTITUTIONAL DISEASES.

Dr. Butler, Alma (Mich.), read a paper on this topic. See page 147.

In the discussion Sir James Grant spoke of our lack of knowledge regarding sugar in the system and eulogized the work of Bernard. Dr. Gould, Philadelphia, warned against the confusion of glycosuria with diabetes proper, and spoke of the need of the medical profession taking up the question of diabetic bread and flour.

Moved by Dr. Aylesworth and seconded by Dr. Hodge, that a vote of thanks be tendered Dr. Butler.

Dr. McCallum presented a case of adherent pericardium. Dr. Dickson, Toronto, gave an instructive exhibition on the use and application of the Finsen Light. Dr. McPhedran, Toronto, presented an interesting

case of amyotrophic lateral sclerosis. Dr. Hodge presented two cases of muscular dystrophy for examination by the Section.

Multiple Visceral Lesions.

Dr. Benedict, Buffalo, read an interesting paper dealing with this topic.

Cardiac Complications in Influenza.

Dr. E. G. Wood, Nashville, Tenn., discussed very fully this important subject. This paper will appear in the Canada Lancet.

The Relation Between the General Practitioner and the Specialist in Regard to the Treatment of Intra-Nasal Disease.

Dr. J. Price-Brown, of Toronto, read a paper on the above subject. This paper will be published in our next issue.

General Session.

Address in Surgery.

Dr. A. H. Ferguson, of Chicago, delivered the address in surgery, which appears in this issue. Dr. Samson, of Windsor, and Mr. I. H Cameron, of Toronto, moved and seconded in felicitous terms a vote of thanks.

The local committee had arranged for a trip to Springbank, London's riverside park. Shortly after four o'clock one of His Majesty's bugler's appeared and blew a retreat. This was the signal that the special cars had arrived. The party were taken to the park where some historic points on the Thames were pointed out. Much interest was shown in the spot where the ill-fated "Victoria" went over in 1881, when 181 people lost their lives.

On return from Springbank, a trip was made over some of the city lines giving the visitors a glance of London's pretty streets and boulevards.

Special cars took the lady visitors and their friends to "The Kennels," where the ladies of London gave an informal reception.

At 7 p. m. all repaired to the London Asylum for the Insane where Dr. McCallum and his staff, aided by the local committee, gave a banquet Among the speakers was Sir James Grant who delivered a very eloquent address.

Thursday, Aug. 27.

The Association had consented to be the guests of Parke, Davis & Co. for the whole day. At 8 a.m. a special vestibule train left for

Walkerville where they were shown through the Canadian Branch. They were then taken aboard the steamer "Owana" and given a five hours trip on the Detroit River. The 21st battalion band of Windsor provided music, and lunch was served on board.

At 3.30 p.m. the party arrived at the Detroit Branch where they were conducted by special guides through the whole of the interesting establishment. Later, a trolley ride around the city was enjoyed, ending with a banquet at the Russel House. Among the speakers at the banquet was Mayor Mayberry of Detroit, who extended to them a hearty welcome. An excellent concert was also given. The members were then returned to London by special train.

GENERAL SESSION.

Friday, Aug. 28.

Many new members were elected. The reports of committees were received and adopted.

A committee was appointed to ask the British Medical Association to meet in Toronto in 1905. It was decided to hold the next annual meeting at Vancouver, B.C.

Dr. Elliot read over the names of about 30 candidates for membership. These were all unanimously elected.

Dr. Powell, of Ottawa, submitted the report of the Nominating Committee which recommended the following be the officers for the ensuing year: President, Dr. S. J. Tunstall, Vancouver, B.C. Vice-Presidents: Dr. S. R. Jenkins, Charlottetown, P.E.I.; Dr. De Witt, Wolfville, N.S.; Dr. Blair, St. Stephens, N.B.; Dr. F. G. Finlay, Montreal, Que.; Dr. Alex. McPhedran, Toronto, Ont.; Dr. J. A. McArthur, Winnipeg, Man.; T. E. Patrick, Yorkton, Assa., N.W.T.; R. L. Fraser, Victoria, B.C. Provincial Secretaries: A. E. Douglas, Hunter River, P.E.I.; C. D. Murray, Halifax, N.S.; —. Crawford, St. Johns, N.B.; A. McPhail, Montreal, Que.; Ingersoll Olmstead, Hamilton, Ont.; Wm. Rogers, Winnipeg, Man.; —. Low, Regina, N.W.T.; W. Brighton-Jack, Vancouver, B.C. General Secreary, Dr. George Elliott, Toronto, re-elected. Treasurer, Dr. A. B. Small, Ottawa, re-elected. Executive Committee: W. J. McGuigan, Dr. Le Fevre, Vancouver; Dr. J. Gibbs, Victoria.

The report of the nominating committee was unanimously adopted.

Dr. A. B. Powell, Ottawa, asked permission to read the report of the Canadian Medical Defense Association. Its work was heartily approved by the meeting.

The general secretary was unanimously voted the usual honorarium for his services.

Dr. Rice, Woodstock, seconded by Dr. Harrison, Selkirk, moved that the thanks of the Association be conveyed to the Govenors of the Normal School, Mr. John Dearness was especially mentioned.

On motion of Dr. Aylesworth, Collingwood, seconded by Dr. Hutchinson, Dr. McCallum and the Asylum staff were thanked for their kindness on the occasion of the banquet given to the members of the Association on Wednesday evening.

The meeting also voted its thanks to the profession of the city and to the ladies of the city of London for their entertainment of the visiting ladies.

Dr. Moorhouse, the retiring President, was warmly thanked for the able, tactful and genial manner in which he had fulfilled his duties.

The presidents of the Medical and Surgical Sections, and the General Secretary and Treasurer, were also thanked for their able services. The railway companies were also thanked.

Dr. Riordan, Toronto, thought that the Association would be justified in asking the Dominion Government for financial aid for the next meeting which is to be held on the Pacific coast for the first time. The following were appointed a committee to wait upon the Government: Dr. Armstrong, Montreal; Dr. Le Fevre Vancouver; Dr. Adam Wright, Toronto; Dr. Powell, Ottawa; Dr. Roddick, Montreal; Dr. Borden, N.S., and Dr. Riordan, Toronto.

The Convention will meet two days in Vancouver and two days in Victoria.

Dr. Riordan suggested that a committee be appointed with the view of getting a better rate than $62, and also any other concessions which might be reasonably granted by the railway companies.

Dr. Armstrong, Montreal, was asked to wait upon Sir William Van Horne in the matter. Power was given him to add to his committee.

On the motion of Dr. Balfour, seconded by Dr. Powell, it was agreed to endorse the suggestion that a committee be formed in that city to invite the British Medical Association to hold their meeting there in 1905.

Owing to the illness of the acting treasurer, Dr. Robinson, of Ottawa, Dr. George Elliott, submitted the report.

At the end of last year's convention at Montreal there was a balance of $225; at the end of this session he predicted a balance of $400.

THE CANADA LANCET

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EDITORIAL.

THE THIRTY-SIXTH ANNUAL MEETING OF THE CANADIAN MEDICAL ASSOCIATION.

The annual gathering this year in London was the second largest in the history of the Association, being second only in numbers to the meeting in Montreal last year, but not in quality of papers, nor in the enjoyable nature of the entertainments. We had good hopes that our London friends would do full justice to themselves and the occasion: and we so expressed ourselves when, last year at Montreal, London was chosen as the place of meeting for this year. It is no easy task to arrange a high-class programme for such a gathering; and, when the London executive succeeded as it has done, all credit must be accorded to its members

The entertainments were excellent, well arranged and carried out. The visiting ladies were taken charge of by the London ladies, and right royally received and entertained. The members of the association spent a very pleasant afternoon at Springbank and evening on the grounds of the London asylum, where they were the guests of the Ontario Government. This was, indeed, a graceful and proper act on the part of the government, and was some recognition of the great work which the medical profession is doing for the public by these annual gatherings, much of the time of which is spent in the study of questions of public utility. Through the kindness of Parke, Davis & Co., the members of the association were taken by special train to Walkerville, thence for a sail on the river to Detroit, in both places being shown through the establishments of this well-known firm. A banquet and a concert were also provided by the above company The members were then returned to London by special train, safe and sound, and well pleased with the day's outing.

The intellectual part of the gathering was a credit to the country. The papers showed great care in their preparation and a high state of medical and surgical attainment in the profession. It may be said, without running the risk of being accused of boasting, that the papers

compared well with those read at the national medical conventions of any country.

Of the long list of presidential addresses now standing to the credit of the association, Dr. Moorehouse's stands well to the front. It touched upon the value of such gatherings to the profession ; the ancient traditions that have been handed down to us, Dominion registration, medical literature, patent medicines, and the practitioner's duty to himself. On all of these topics his remarks were timely, and we feel will do good. The time is coming when we will have a national profession, and when Dominion registration will be an accomplished fact. We feel that all the provinces will yet agree to it. In the meantime, we commend what Dr. Moorehouse says on the subject. His words are along the line we have often urged, that the registration bill be so amended as to permit of its coming into force if five of the provinces agree to its terms. The others would come in as soon as they saw its good effects upon those accepting it.

On the question of patent medicines too much cannot be said. It should be made obligatory to publish the exact composition of all these preparations; and it should be made a fraudulent act to publish any testimonial that was not strictly true, or to make any claim for a preparation that could not be borne out.

Dr. A. H. Ferguson's address in surgery was all that was expected of him—a brilliant production. In a masterly way he outlined the progress that has been made and the pathway along which the leaders of the profession have travelled in effecting that progress. In well chosen phrases he also pointed out in what direction we must look for improvement in the future. The past is full of noble battles fought and won, while the future has set high before us the star of hope. His address embodied the spirit of Goethe when he said:—" Here is all fulness, ye brave, to reward you. Work and despair not."

The address in medicine by Dr. H. A. McCallum, was important for two reasons: it was able and it was on a subject to which too little attention has been paid. It is to be hoped that Dr. McCallum's address will have the effect of directing attention to the lymphatic circulation, and the role it plays in health and disease. Now that he has a position that brings much clinical material his way, we hope he will continue his studies upon this question, and that the profession will hear more from him on the lymphatic system.

The papers of Drs. Gould, McGraw, Wood, Butler and Hornibrook, though from the neighboring republic, were welcome additions to the proceedings of the association. But, after all, there is only one

country in medicine, there is no such thing as French medicine and Russian surgery and American gynæcology. Hippocrates wrote, not for Greece, but for us; Pirogoff toiled, not for Russia, but for mankind; Simpson gave chloroform, not to Edinburgh, but to the world; so of Lister, Pasteur, Behring, Koch, Jenner, McDowell, Beaumont.

The association goes next year to the far west, and we hope that the east will do her duty. Now that the next meeting has been sent beyond the Rockies, let those who have sent it there follow it and make it a grand success, the greatest meeting in the history of the association.

We wish the committees having the matter in hand every success. We would urge on the Dominion Government the justice of aiding the association in this move to the far west. The railways will, no doubt, act in a liberal spirit, and enable many to avail themselves of the advantages of attending the next meeting.

It is to be hoped the British Medical Association will accept the invitation to hold its 1905 meeting in Toronto. Its members will be made thrice welcome:—Welcome, because they are good fellows; welcome, because they are the exponents of the best that is to be found in modern medicine and surgery; and, welcome, because they are one with us, honoring the same King, obeying the same laws, and upholding the dignity of the same old flag. We quote two lines from an old poem, which we hope may prove true:—

> "Now the west says to the east, 'Come over to me,'
> And the east says to the west, 'I shall visit thee.'"

THE PROFESSION OF MEDICINE.

The profession of medicine is both ancient and honourable. Hippocrates, Aesculapius, St. Luke, Galen, are worthy names to look back to, to inherit the traditions of, and in whose footsteps to follow; while many of Christ's most gracious acts were the curing of the sick, the healing of the maimed, the giving of sight to the blind, and the restoring of reason to the mentally deranged. Medicine, in the truest sense of the word, is a profession, using the word profession to mean that the doctor places honour before gain, the interests of his patient before his own, the discharge of his duty before his life. He stands on a par with the true soldier, who chooses the open breach and the opposing enemy with death, if need be, rather than safety in retreat with dishonour.

The profession of medicine is a learned profession. The range of its studies is wide, and its opportunities for culture, many. It is here that we need the finest application of chemistry and biology to the

practical uses of man; while the powers of observation, in the study of disease, have brought within their scope the richest fields of investigation. Much of the literature of medicine, in the English, French and German languages, is in the very best style, and should prove as excellent a model for study as the choicest works of Ruskin, Arnold, Burke, Emerson, Lowell. In the study of medical literature, the intellectual faculties find free play for the logical processes, for the acquisition of a rich and varied storehouse of ideas, and for the keenest discrimination between truth and error. Here we have the very essentials of a learned profession. Let us indulge in the hope that among the young men and women now engaged upon the study of medicine, some may be willing to give a bright example to others in paths yet untrodden, by taking the lead of their fellow citizens, through their strenuous efforts to advance their chosen calling, and to whom the words of Lucan may be justly applied—*clarum et venerabile nomen, gentibus, et multum nostræ quod proderat urbi.*

"A name illustrious and revered by nations,
And rich in blessings for his country's good."

But the profession of medicine is honourable and noble in another sense. Perhaps, no equal number of persons in the world is the repository for so many secrets of the life of the people, and the custodians of so much confidential knowledge. Notwithstanding the vast importance and number of these confidings and the great army of those in the possession of them, how rare a thing it is, indeed, to hear of an instance where this confidence has been betrayed! How universally and how honourably the oath of Hippocrates is observed! This has done much to gain for the medical profession the epithet "*noble.*" The true doctor will suffer much loss, and has been known to endure imprisonment, rather than divulge the professional secrets of, or break faith with, a patient. With a word, doctors could set rolling the apple of discord in families, between friends, and among neighbors; but instead of so doing they are ever found with the peace-makers, with those who are extending the olive branch in lieu of Pandora's box. Judged by the test *acta exteriora indicant interiora secreta,* medical practioners stand high, and well merit the disignation of "the noble profession."

In yet another way is the medical profession a noble one. Its aims are to save and prolong life, to lessen the total amount of suffering in the world, and to prevent disease and all its consequences, as far as it may be within the power of man. When war-clouds darkened the sky and pestilence stalked through the land, it has ever been the boast of the members of the medical profession to risk their own lives in their

efforts to save the lives of others, to spend their strength in the service of those in need of their aid, and to stand as a protecting wall between the well and the ravages of disease and death.

This is not all. The medical profession is noble inasmuch as it is progressive in "the service of man." It is within the truth to claim that no other profession has made the progress that medical science has. Smallpox has been bound in chains, diphtheria has lost nearly all its terrors, typhus and relapsing fevers are now only interesting historically, the plague has had its wings clipped, both by prevention and cure, typhoid fever now counts its tens where it formerly counted its hundreds, and the great white plague, tuberculosis, has had its death lists cut in two. But the list could be still further lengthened. In the domain of surgery, gigantic strides have been made. The anatomy and pathology of Hunter, the anæsthesia of Simpson, the asepsis of Lister have enabled surgeons to perfect their technique, and devise and undertake new operations that would never have had a place in surgery but for the above advances. There is much yet to be done, nor need there be any jealousy among the workers, as new discoveries make further discoveries possible. The words of Lord Brougham to the students of the University of Glasgow, in 1825, are peculiarly appropriate to the present. "No man of science needs fear to see the day when scientific excellence shall be too vulgar a commodity to bear a high price. The more widely knowledge is spread, the more will they be prized whose happy lot it is to extend its bounds by discovering new truths, or multiply its uses by inventing new modes of applying it in practice. Their numbers will indeed be increased, and among them more Watts and more Franklins will be enrolled among the lights of the world, in proportion as more thousands of the working classes, to which Franklin and Watt belonged, have their thoughts turned toward philosophy; but the order of discoverers and inventors will still be a select few, and the only material variation in their proportion to the bulk of mankind will be, that the mass of the ignorant multitude being progressively diminished, the body of those will be incalculably increased who are worthy to admire genius, and able to bestow upon its possessors an immortal fame."

Success depends upon work. "Genius," said Ruskin, "is the unlimited capacity for work." Hear what another great sage said. Thomas Carlyle, addressing the students of Edinburgh University, in 1866, uttered the following memorable words. "Advices are very seldom much valued. There is a great deal of advising, and very little faithful performing. And talk that does not end in any kind of action is better

suppressed altogether. I would not, therefore, go much into advising; but there is one advice I must give you. It is, in fact, the summary of all advices, and you have heard it a thousand times, I daresay; but I must, nevertheless, let you hear it the thousand and first time, for it is most intensely true, whether you will believe it at present or not—namely, that above all things the interest of your own life depends upon being diligent now, while it is called to-day. Diligent! That includes in it all virtues a student can have."

If the student of to-day is governed by the traditions of the past, and inspired by the hopes of the future, working diligently in the great field of medical science, his lot shall not be an unhappy one and his reward shall be well assured. For him shall be vouchsafed the acquisition of true knowledge; and in the language of Shelley, new visions shall open before his mind—

> "Like a spirit hastening to its task
> Of glory and of good the Light springs forth,
> Rejoicing in its splendor, till the mask
> Of darkness fades from the awakened earth."

We bid you be of good hope—*wir heissen euch hoffen*, work and despair not. These were the words of Goethe. Seize hold upon them, for they shall ever remain true.

One word more from Carlyle. "He that can abolish pain, relieve his fellow mortal from sickness, he is indisputably usefullest of all men. Him savage and civilized will honor. As a Lord Chancellor under one's horsehair wig there might be misgivings, still more so, perhaps, as a Lord Primate under one's cauliflower, but if I could heal disease I should say to all men and angels without fear '*En! Ecce!*'"

THE INAUGURATION OF THE NEW MEDICAL BUILDING.

Up to the present, the important work of educating young men for the medical profession has been carried on in buildings that were by no means ideal. The buildings on Gerrard and Spruce streets answered their purpose, largely because of the able and energetic gentlemen who formed the teaching staffs of Trinity Medical School and Toronto School of Medicine; and, later, of Trinity Medical College and the Faculty of Medicine of the University of Toronto.

Eripuerunt cœlo fulmen is, nevertheless, true of the work of those who labored in the cause of medical education fifty, forty, thirty, even twenty years ago. They had no building such as that which now forms part of the University system; but they had wise heads and stout

hearts. A common key and kite string were crude instruments, indeed and yet, by their aid, Benjamin Franklin snatched lightning from heaven, and laid the foundation for Morse, Bell, Edison, Marconi, Lord Kelvin.

So of those earlier teachers, a beginning had to be made, and they went to work with a will. Not deterred by *res angusta domi*, they struggled on. *Their* work was the *key* that opened the door to the present condition of things. They were the Franklins and the Morses of the present proud position of medical education in Toronto. They had much of the *ikmas phrontidos* of the ancient Greeks. The *res magna* and the *res secunda* of to-day are due in no small measure to their labors.

Respice, aspice, prospice is the watchword of the hour. Let all that have the university's best interests at heart look back on the days that are passed, look at the aspect of the present day, and look also into the future. Learn from the lessons of the past. The University of Toronto once had a medical faculty, but it was discontinued. After long years, it was restored, and now both medical faculties are welded into one. The rivalry of former days begot respect, and respect gave rise to friendship, and friendship led to union. *Felix faustumgne sit.*

Let no rude hand up-root the newly planted tree. In the words of Horace: "Out of the smoke of former things has come the light that points to a glorious future." Let the united medical faculty of the University of Toronto and Trinity University strike its roots deep into the affections of the people of the Province, let it rear its sturdy trunk aloft with vigor to resist the storms of opposition, and let it spread its broad branches afield with leaves of healing and fruit of knowledge.

If the University shall prove herself to be a worthy alma mater, her alumni all over the world shall prove themselves worthy sons. We predict that her newly adopted alumni will not be less loyal than those more distinctively of her own creation. The alumni of the future will be able to look upon their alma mater with the same pride that is found in the breasts of those who claim Oxford, Cambridge, Edinburgh, Harvard, as their universities. After having seen many lands and seats of learning, they will be able to look back to their college days in Toronto and say—

Ille terrarum mihi praeter omnes
Angulus ridet:

For me that corner of the earth possesses more charms than all other places.

RADIUM, URANIUM, THORIUM, AND HELIUM.

Many eminent chemists are at work investigating the properties of these strange, rare, and mysterious elements. These chemists include Sir William Ramsay, Professor Dewar, Professor Rutherford, Monsieur Curie, J. I. Thomson, Mr. F. Soddy, Sir William Huggins, and others.

The gases evolved from the thermal springs of Bath contain helium. Sir William Ramsay and Professor Soddy have detected, by the spectroscope, the presence of this element in the gases extracted from a radium salt. So far, helium has been found in extremely small quantities.

Thorium is much more abundant. The nitrate of thorium is manufactured in large quantities in connection with the Welsbach mantle industry. Thorium is a gray metallic element found in connection with certain rare minerals. Thorite is a vitreous or resinous silicate of thorium, crystallizing in the tetragonal system.

Radium is found in some specimens of pitchblende, one of the minerals from which uranium is obtained, and which also exhibits remarkable radio-activity. Monsieur and Madame Curie, of Paris, followed up the work of M. Becquerel on uranium. In working with pitchblende they found that it sometimes contained an ingredient of much greater radio-activity than uranium. This substance was named polonium. Continuing their investigations on the very active radio-emanating barium salts found in the pitchblende, they succeeded in isolating radium in the form of a chloride. The atomic weight of this new metallic element has been set down at 225. Radium salts are self-luminous. Radium salts impart a green light to barium platino-cyanide, a remarkable phosphorescence to hexagonal blende of sulphide of zinc, and cause diamonds to glow with a pale-greenish light. Radium remains constantly warmer than its surrounding objects. It appears to suffer no loss of weight or radio-activity while parting with so much heat and light. The ions of radium rotate so violently as to emit a violet light, and then to return to their original atoms, repeating the same process again.

These three elements, but especially radium and thorium, possess the properties of producing spontaneously rays and radio-active emanations. The salts of radium have an undoubted action upon diseased tissues. Mr. Mackenzie Davidson, of London, Mr. John Macintyre, of Glasgow, and Professor Gussenbauer, of Vienna, have employed the rays from radium in the treatment of lupus, rodent ulcer and superficial cancer with very promising results. The rays from radium can burn the normal tissue. Three kinds are distinguished as coming from radium: infinitely small positively charged atoms of matter flying at great speed;

rays which seemingly correspond to the cathodic rays in a Crooke's tube; and rays which evidently correspond to the x-rays. The rays in an hour will burn healthy tissue after passing through a thin layer of air and another of mica.

The radio-active emanations, or gases, from radium and thorium possess the power of spontaneously emitting rays similar to those emitted by these elements or their salts. The rays of radium and thorium possess powerful germicidal qualities. The attempt is now being made to utilize these radio-active emanations, or gases, in the treatment of pulmonary tuberculosis. The nitrate of thorium and the bromide of radium are the salts used. These salts are placed in a suitable gasholder and dissolved with a few drops of water, and the taps of the gasholder closed immediately. For the first trial, a few bubbles only of the radium gas should be drawn into the lungs, and retained there as long as possible. When using the nitrate of thorium, the solution must be neutralized by means of ammonia until the solution is just ready to precipitate the hydroxide of thorium. This is necessary to avoid the irritation of the lungs with the free nitric acid. In inhaling these gases the air is made to pass through the solutions and thereby become charged with the radio-active emanations.

These emanations have the power of leaving behind them a layer of radio-active matter, which continues active for some time. It is in this way that the effect of these gases are prolonged in the air cells of the lungs. The thorium inhalations may be used almost continuously, whereas the inhalations of the more active radium emanations may be resorted to once or twice in the twenty-four hours.

A kilogram of thorium nitrate costs $10, and a milligram of radium bromide, about $5. A few milligrams of the radium salt are sufficient for the gasholder, and continue to emit those active emanations for a long time. The utmost care must be exercised in all these manipulations that the gases be not lost. The gasholders must be provided with properly fitting taps. There is thus the possibility of introducing into the air-cells of the lungs an active gas of radium and thorium that possesses the same power to emit rays as do the solid salts of these elements. The rays from these radio-active emanations, or gases, have the same germicidal properties as those from the salts. Radium rays have cured both rodent ulcer and lupus. If these rays are able to cure lupus on the face, it is well within the range of possibility that they will be able to cure lupus of the bronchial tubes and air cells—pulmonary tuberculosis.

When the emanations are inhaled, the salt of radium and thorium reproduce a fresh supply. This process goes on in-

definitely. We have in these properties of radio-activity and the rays produced in the vacuum tubes of the x-ray machine great possibilities for future therapeutic advancement. It is now possible to inhale a ray producing gas.

HYPNOTISM, MESMERISM, BRAIDISM.

It is admitted the practical application of hypnotism in surgery is very limited. In the first place, few physicians care to learn how to hypnotize people. Then there is the difficulty that many persons are hard to bring under the influence of suggestion. Further, it must be borne in mind that once a person has been hypnotized, it may be unfortunately too easy a matter to induce the hypnotic state again. Indeed, the condition of auto-hypnotism may result. It is quite true that physicians frequently make use of the powerful influence of suggestion in the treatment of their patients; but this is quite a different thing from the formal hypnotizing of a patient.

The main use to which hypnotism has so far been put is that of giving public exhibitions for the amusement of the spectators. Some clever fakir who has learned how to practice hypnotism advertises meetings at which such performances will take place. This is trading upon the morbid curiosity of the public, and the nervous instability of a certain number of persons. All this is done for the gain of the so-called hypnotist.

But the other side must not be overlooked. The gratification of such morbid curiosity on the part of the audience is not devoid of harmful results. These persons know nothing of the laws governing hypnotism and have, as a consequence, a wrong and exaggerated notion of the demonstrator's powers. It becomes an education in wrong views of nature's processes. It must also be remembered that some have had their nervous organization seriously deranged, by being the subjects of hypnotism on these public occasions.

Some four years ago, the British Medical Association took strong grounds against public exhibitions of hypnotism; and recently the German minister of the Interior has renewed the order forbidding these demonstrations. This is as it ought to be. One can hardly imagine anything more disgusting than a clever fakir, in the presence of an audience, hypnotizing some neurotic subject for the amusement of those present and his own gain.

THE CHIEF CORONER FOR THE CITY OF TORONTO.

We herewith give the Amendment to the Act respecting Coroners, and the Regulations of the Lieutenant-Governor-in-Council. The plan now introduced in Toronto is somewhat similar to that which pertains in Scotland, where the Procurator-Fiscal holds such investigations. We believe that the Amendment and Regulations will be effective and valuable in simplifying the holding of inquests.

AMENDMENT TO THE ACT RESPECTING CORONERS.

Section 22 of The Statute Law Amendment Act, 1903, provides:

22. Section 1 of The Act respecting Coroners is amended by adding thereto the following subsections:

(2) The Lieutenant-Governor may from time to time appoint a coroner, to be designated "the Coroner for the City of Toronto," and from and after such appointment all coroners or associate coroners theretofore or thereafter appointed in and for the County of York as to the City of Toronto have and exercise within the City of Toronto the powers only of associate coroners for the said city, but this shall not limit the power of the Lieutenant-Governor to make further appointments of associate coroners for the City of Toronto from time to time. The powers and duties of the Coroner of the City of Toronto appointed under this subsection, and of all associate coroners in the said city respectively, shall be defined by and shall be exercised subject to such regulations as may from time to time be made by the Lieutenant-Governor in Council.

(3) Whenever the death of any person appears to have been caused by an accident occurring upon a street or highway in the City of Toronto in the operation of any railway or street railway or electric railway on or across any street or highway the Crown Attorney for the County of York shall direct the coroner or one of the associate coroners in the said city to hold an inquest upon the body of the person so dying, and the coroner or associate coroner to whom such direction is given shall issue his warrant and hold an inquest accordingly.

(4) Section 4 of this Act shall not apply to or be in force as to inquests in the City of Toronto under the foregoing provisions of this Act, nor as to investigations held in the City of Toronto under section 6 of this Act.

(5) The coroner for the City of Toronto shall be paid such salary, not exceeding $1,500, as may be fixed by Order-in-Council, and the same shall be paid by the city half-yearly and shall be in lieu of fees which would otherwise be payable to him and the city shall be entitled

to be reimbursed out of the Consolidated Revenue Fund as to one-half the amount of such salary.

(6) Any coroner within whose jurisdiction the body of a person is lying upon whose death an inquest ought to be held may hold the inquest. (See Imperial Coroner's Act, 1867, s. 7.)

REGULATIONS PASSED BY THE LIEUTENANT-GOVERNOR-IN-COUNCIL PURSUANT TO CHAPTER 176, SECTION 22, 3 EDWARD VII.

1. Immediately on any death being reported to any Police Officer in the City of Toronto under circumstances that appear to require investigation by a Coroner, it shall be the duty of the such Police Officer forthwith to report the same to the Coroner for the City of Toronto.

2. It shall be the duty of the Coroner for the City of Toronto upon receiving any report as to a death within the limits of the City of Toronto under circumstances appearing to require investigation by a Coroner, forthwith to make such enquiry as may be necessary in the premises, and either personally to investigate the circumstances under which the death in question has occurred, and to hold an inquest if he is so advised, or to request some Associate Coroner for the City of Toronto to issue a warrant and make an investigation or hold an inquest. And in making such requisitions the Coroner for the City of Toronto shall apportion the work as equitably as possible amongst the several active Associate Coroners for the City of Toronto.

3. It shall be the duty of an Associate Coroner, upon the receipt of a requisition to make an investigation or hold an inquest, signed by the Coroner for the City of Toronto or by the Crown Attorney for the County of York, as the case may be, forthwith to issue his warrant with such requisition thereto attached and file the same at any police station in the City of Toronto, and proceed to make an investigation or hold an inquest. And no fees shall be payable to an Associate Coroner in respect of any investigation or inquest held by him unless the warrant and the requisition in that behalf have been so filed by him.

4. The requisition hereinbefore referred to, signed by the Coroner for the City of Toronto or by the County Crown Attorney for the County of York, as the case may be, shall take the place of the declaration referred to in section 4 of "The Act respecting Coroners," so far as the same relates to investigations and inquests in the City of Toronto.

PERSONAL AND NEWS ITEMS.

Dr. Knight, it is stated, will locate at Hoard's Station.

Dr. Graham, of Ottawa, has hung out his shingle in Galetta.

Dr. Arthur W Mayberry, Toronto, has resumed practice.

Dr. Keith and his bride have arrived at their new home in Omemee.

Dr. J. J. Wilson, of Bradford, has decided to locate in Burk's Falls.

Dr. Charles Fisher, of Sarnia, has gone to Detroit where he intends locating.

Dr. Reid, Demorestville, has gone to Port Arthur ashead physician in the hospital there.

Dr. Maitland Cook, of Traverson, has gone to Souris, where he intends to practice.

Dr. A. D. Stewart, Richmond, Que., has been appointed port physician at Montreal.

Dr. Gordon Mylks, of Kingston, was married recently to Miss Lucy Row, of Kentucky.

Dr. Featherstone, of Prescott, recently spent a short time visiting the hospitals in Toronto.

Drs. Maloney and Kennedy have left Charlottetown, P.E.I. and have gone to the West.

Dr. J. B. Martyn, Alvinston, was married at Motherwell, on 13th August, to Miss Jessie Rae.

Dr. A. P. Nelles, of Windsor, has gone into partnership with Drs. Brien and Doyle, of Essex.

Dr. C. H. McDougall, of Caradoc, left a short time ago for a sojourn among the British hospitals.

Dr. A. McPhedran, of Toronto, when in Britain attended the Allied Universities Conference.

Dr. A. S. McCaig, of the Sault, and Miss Margaret Shanks were married a few weeks ago.

Dr. W. E. Olmsted, of Caledonia, has disposed of his practice to Dr. F. G. Morrow, of Strathroy.

Dr. J. T. Clarke, of Bloor St., Toronto, was married at Kincardine to Miss Malcolm, 9th September.

Dr. F. Dykes, of La Riviere, was reported to be seriously ill with typhoid fever a short time ago.

Dr. Morrison has bought the premises occupied by the late Dr. McArton and will locate in Paisley.

Dr. Cecil C. Ross, who is medical health officer for London township, has been appointed a coroner.

Dr. O. M. Jones, of Victoria, returned home in the end of August after a several months visit to Europe.

Dr. Frank Neal, of Walton, has gone to the Old Country for post-graduate study and hospital experience.

The marriage of Dr. W. D. Finn, of Halifax, and Miss Emma Grant took place at St. John, N.B., 2nd September.

Dr. W. D. Keith, formerly of Van Anda, has returned to Vancouver after a post-graduate course at Johns Hopkins.

Dr. Sargent, Springbrook, is making a prospective visit in Manitoba. Dr. Paget, of Elora, is acting as *locum tenens.*

Dr. Lafleur, of St. Gregoire, was seriously injured in a railway accident recently, the day before he was to be married.

Dr. Thomas H. Thornton, Consecon, received every vote as member for the Quinte and Cataraqui District, No. 14, C P. and S.

A short time ago, Dr. Elliott, of Stellarton, N.S., was operated upon for appendicitis. When last heard from he was doing well.

The marriage of Dr. G. F. R. Richardson, of Sprucedale, and Miss Mabel Young, of Markham, was celebrated 3rd September.

Dr. Wittan, who acted as surgeon to the second contingent in South Africa, has returned from Britain, and will locate in Ottawa.

Dr. E. E. Kitcher, of St. George, has been appointed chairman of the Provincial Board of Health. We congratulate the doctor.

Drs. Holden and Robertson, of Victoria, B.C., left Victoria for a three months' visit among the hospitals of the eastern cities.

Dr. J. B. Kennedy, formerly of Welland, and now of Australia, recently visited his friends. His new-married wife accompanied him.

Dr. James Stewart, of Montreal, is now convalescing from his recent severe illness. His many friends will be glad to learn of his recovery.

Dr. Haig has resigned his position as Medical Superintendent of the Kingston General Hospital, and intends going to Britain for a special course.

Dr. William Bayard, the Nestor of the Medical profession in St. John, celebrated his 90th birthday a few weeks ago. Many congratutions.

Dr. J. W. Hart, of Bracebridge, Muskoka, is a candidate for the local legislature. The seat was rendered vacant by the death of Dr. Bridgeland.

Campbellford, population about 3,000, has four doctors; Stirling, population 1,000, has six doctors; Madoc, population 1,300, has five doctors.

Dr. G. G. Ferguson, a graduate of the University of Glasgow, has decided to locate in Strathroy. He has had an extensive hospital experience in Britain.

Dr. F. C. Marlowe, of Blackstock, has returned from Britain where he was engaged in hospital work. The Doctor was very successful in his examinations.

Dr. Costolow, of Valcourt, Que., who had practised there for many years, accidently took an overdose of an anodyne medicine, which caused his death.

Dr. George W. Ross, son of the Hon. G. W. Ross, has gone to Europe for two years study. He intends spending a good deal of his time in Edinburgh and Leipsig.

Dr. J. F. Boyle, son of Mr. David Boyle, chief of the Archæological Department of Ontario, after visiting many countries in the East says there is no place like Canada.

Dr. W. T. M. MacKinnon, a recent graduate of the University of Toronto, and house Surgeon in Grace Hospital, has passed the examination for Nova Scotia and will practice in Amherst.

Dr. Hugh Ross, who has practised for some time in Stellarton, was made the recipient of a handsome gold chain and locket and a purse of gold on his leaving for his future location at Canso.

Dr. I. Smith, who is opening an office in Guelph, has just returned from New York, where he was house surgeon in the New York City Hospital for two years, and the New York Lying-in Hospital.

The eighteenth annual meeting of the Association of Executive Health Officers of Ontario, opened in Peterborough on 10th September. The attendance was good, and a number of interesting papers were read.

Dr. Sprague, Stirling, the author of "Medical Ethics and Cognate Subjects," who, during the editorship of this journal by Dr. Fulton, his teacher, was a faithful contributor to its pages, was recently appointed examiner in materia medica and pharmacology by our College of Physicians and Surgeons. The doctor for two years was examiner in medical jurisprudence, Trinity University, and he honors his recent honored appointment by our Medical Council.

We draw the attention of physicians who may desire to sell their practices or those who may wish to buy a medical practice, to the Canadian Medical Exchange. Dr. Hamill has been conducting this important department of medical affairs for the last ten years, and from close knowledge of his method of doing business we can strongly recommend him to the confidence of the profession, and advise any of our readers who may have any business in this line to place it in Dr. Hamill's hands, with the full assurance that the utmost business ability, integrity and professional secrecy will be utilised. We have examined his method of doing business, and must admit that he has systematised it to perfection as to meet the wants of the profession most fully.

During the session of the late Canadian Medical Association, there were many happy meetings of men with fellow-graduates of early days. Three men who were fellow-graduates of 1861, five who parted in 1869, met.

"How few of us will ever meet
Again this side the narrow stream?
And even if our hands could touch,
We'd seem like figures in a dream.
It's youth, sweet youth, good-bye to you,
And we are ghosts that cry to you
For the old days,
For the old care-free days."

. . . . "Let's have a loving cup with her—
A cup with her and a song with her,
And a sitting still and long with her,
For the old care-free days."

OBITUARY.

LOCHLIN C. SINCLAIR, M.D.

Dr. Sinclair, of Tillsonburg, died 21st August. The doctor was one of the best known men in his district, having run for member of Parliament in the riding some years ago; and in his profession making hundreds of friends, always willing to put himself out in order to administer to the wants of his numerous patients. He was in his 64th year.

W. J. SLATER, M.D.

Dr. W. J. Slater, for many years a resident of Essex, died in Chicago, on the 20th September, at the advanced age of 85 years.

W. G. MONTGOMERY, M.D.

Dr. W. G. Montgomery, of Minden, Ontario, died at his father's residence at Gorrie on the 8th September, after a short illness. Deceased was 29 years of age.

WILFRED L. TAYLOR, M.D.

Dr. W. L. Taylor, of Waterloo, died on 4th September, in his 29th year. He was a graduate of McGill, and appears to have contracted tuberculosis during his last year at college. He was a young man of much promise.

FRANK. C. FRASER, B.A., M.D., C.M.

Dr. Frank C. Fraser, B.A., of Ste. Agathe des Monts, died at his father's residence, No. 70 University street, Montreal, 26th August, at the age of 30 years. The deceased graduated from McGill University in June, 1898. Since then he has been suffering from tuberculosis. On leaving college he went to Saranac Lake in search of health, but was unsuccessful. He remained there for two years and then removed to Ste. Agathe, where he practiced, being in charge of the Sanatorium.

E. F. CHEVREFILS, M.D.

Dr. E. F. Chevrefils, Inspector of Public Buildings of the Province of Quebec, passed away rather suddenly Sunday, 23rd August, at his home on Berri street. Heart disease was the cause of death, and he had been ill only a day and a half. The late doctor was born on November 23rd, 1835, at St. Michel, Yamaska County, and was educated at St. Hyacinthe College. After studying at the old Victoria College and settling at Nicolet, and later at Somerset, he became Coroner of the District of Arthabaska. On November 19th, 1896, he was appointed Inspector of Public Buildings for the Province of Quebec, residing in Montreal.

R. B. SHAW, M.D.

The death of Dr R. Bruce Shaw, of Charlottetown, took place in the Massachusetts General Hospital on Sunday evening, September 6th,

On Monday, Aug. 31, while in Boston, he had been taken ill with appendicitis, symptoms of which had previously manifested themselves. He was taken to the hospital, and after consultation was immediately operated upon that evening.

Dr. Shaw was one of Charlottetown's most popular physicians. He was a son of William Shaw, Covehead. After graduating with honors at P. W. College, he taught in Flat River and West Kent school. At McGill his course was a brilliant one and after two years in the Royal Victoria Hospital he began practising in 1898 in Charlottetown, where he has been universally esteemed.

JOHN BOSTWICK LUNDY, M.D.

On 20th August, Dr. J. B. Lundy, of "Hillcrest," Preston, died at the age of 78. He was regarded as the grand old man of Waterloo County. A week prior to his death he was taken ill with an attack of hemiplegia. During the past ten years the doctor lived a quiet and retired life among his friends and his books. He was regarded by all who knew him as a man of very wide reading; and, indeed, was called the "Sage of Hillcrest." He was born in Whitchurch Township, North York, on 23rd January, 1825. His early career was marked by the struggles incidental to those days when the Province was new. The first twenty-three years of his life was spent on his father's farm. Some fifty-nine years ago he taught school at Mariposa, on the Scugog Lake. On returning home from his school his father asked him if he paid all his bills before leaving. The subject of this sketch showed his father some money which he had saved, upon which the father remarked, "John, where did thee get all that money? I hope thee got it honestly." He then studied at Lewiston Academy and taught school at Brownsville and Lloydtown. He took his medical course in Buffalo. For several years he practised with his brother-in-law, Dr. Hunter, at Newmarket. In 1851 he settled in Sheffield, with nineteen dollars, a borrowed horse and a bill for the drugs he had bought on credit. He soon had a wide practice in the district. For twenty-seven years he practised in Sheffield. He then removed to Galt, where he followed his professional work for nine years. He then retired to his home, "Hillcrest," in Preston, where he died. His private and public life was of the highest type. Intellectually and physically he was a grand man, an honor to the medical profession, and an influence for good wherever he lived. He retained the respect and esteem of his many friends throughout his long and active life. He took an active interest in the affairs of the municipality,

his church, and the state; and frequently attended medical societies, being at the Pan American twice.

Dr. and Mrs. Lundy enjoyed a happy married life of fifty years, and were blessed with a family of six children, four daughters and two sons. The sons are both practising physicians of note. Frank is stationed at Portage la Prairie, and John a short time ago returned from Vienna, Austria, where he had been studying some special branches of his profession. The daughters are Miss Florence Lundy, at home; Mrs. (Dr.) F. G. Hughes and Mrs. J. Y. Graham, Galt; Mrs. (Dr.) Wardlaw, deceased.

BOOK REVIEWS.

THE CHRISTIAN SCIENCE DELUSION.

By Rev. A. C. Dixon, D.D., of Boston. Published by William H. Smith, 25 Stanhope Street. Price 10 cents.

This little pamphlet of 52 pages contains three sermons preached on the fallacies of Christian Science. The first sermon is titled "Twenty-one facts about Christian Science" on the text, "Science falsely so-called: which some professing have erred concerning the truth." The second sermon is on "The Christian Science Apostasy" on the text, "They shall turn away their ears from the truth and shall be turned into myths." The third sermon is called "How Christian Science wrests the Scriptures" and is on the text, "Which they that are unlearned and unstable wrest, as they do the other Scriptures, unto their own destruction."

Of the many books, pamphlets, and articles, upon the subject of Christian Science which the reviewer has read, the one by Rev. Dr. Dixon must take first place. It ought to be in the hands of every physician, in order that he might have in a ready form a complete answer to this modern insanity. From every standpoint Christian Science is attacked, exposed and torn to shreds. It is shown to be a crude form of an East Indian pagan philosophy. It is the doctrine of Yoga, or the belief in the nothingness of all things.

The pamphlet deals fully with Mrs. Eddy's claims to greatness and quotes the following choice piece from one of her recent writings. "My church will not receive a message from this summer, for my annual message is swallowed up in the sundries already given out. These crumbs and morsels will feed the hungry, and the fragments gathered therefrom should waken the sleepers 'dead in trespasses and sins'—set the captive sense free from self's sordid sequel, and one more round of Old Sol gives birth to the sowing of Solomon." In one of her earlier books there appeared the picture of Mrs. Eddy and Jesus Christ with a halo round the head of each!

DISEASES OF THE PANCEAS.

Diseases of the Pancreas, its cause and nature. By Eugene L. Opie, M. D., Associate in Pathology in the Johns Hopkins University; Fellow of the Rockefeller Institute of Medical Research. Philadelphia and London: J. B. Lippincott Company. Montreal: Charles Roberts, 1524 Ontario Street.

It is genuine pleasure to review an original thesis of such merit as the present volume of 350 pages proves itself to be. Under the headings of anatomy, anomalies, histology, inflammation, hæmorrhages, fat necrosis, interstitial changes, hyaline degenerations, diabetes mellitus, and treatment, the reader is furnished with much valuable information. Throughout the book, the remarks on etiology and symptomatology are both useful and interesting. On the relationship between disease of the pancreas and diabetes mellitus, the author states that more than half of all cases of diabetes is due to destructive lesion of the pancreas, and that the destruction is mainly in the islands of Langerhans. Another interesting portion of the book is that dealing with the connection between gall-stones and acute hæmorrhagic pancreatitis. In the treatment of diabetes mellitus, due to disease in the pancreas, the administration of pancreatic extract has been found to be beneficial in many cases, more particularly when there is inability to digest fats and there is an escape of these in the faeces. We can not only recommend but we can praise the book.

POST-MORTEM PATHOLOGY.

A Manual of Post-Mortem Examinations and the Interpretations to be drawn therefrom A Practical Treatise for Students and Practitioners. By Henry W. Cattell, A.M., M.D., Pathologist to the Philadelphia Hospital and the West Philadelphia Hospital for Women, and Sometime Director of the Josephine M. Ayer, Clinical Laboratory of the Pennsylvania Hospital; Senior Coroner's Physician of Philadelphia; Pathologist to the Presbyterian Hospital; Prosector of the American Anthropometric Society; Demonstrator of Morbid Anatomy in the University of Pennsylvania, etc. With 162 Illustrations. Philadelphia and London: J. B. Lippincott Company, Montreal: Charles Roberts, 1524 Ontario Street.

To begin with, this octavo volume of 375 pages is got up in the very best possible style. The binding, paper, printing, and illustrations leave nothing to be desired. The book deals with the whole question of making Post-Mortems, and the information to be gained from the gross appearance of the various organs. Much useful information is furnished on the subject of making bacterial examinations. Comparative post-mortems are also taken up at some length. A very important chapter is added on medico-legal suggestions. The International classification of the causes of death is given in full, consisting of fourteen classes and 179 designated causes of death. We should think this book would be of the utmost value to pathologists.