

MEDICAL SCIENCE

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ORIGINAL ARTICLES.

CYSTITIS.

BY W. BRITTON, M.D., TORONTO; A PAPER READ BEFORE THE
TORONTO MEDICAL SOCIETY, OCT. 16, 1888.

(Continued from last issue.)

Coulson says that it is almost impossible to distinguish the corpuscles of mucus from those of pus; that it is probable that epithelial cells become transformed into pus corpuscles, and that the latter are spherical, granular on the surface, and have divided nuclei. Occasionally shreds of false membrane are voided with the urine, and cases are recorded where obstinate retention, caused by large sheets of detached membrane, has rendered cutting operations necessary. Should the case progress unfavorably, the condition of active sensibility to pain passes eventually into a *quasi* typhoid state, manifested by hebetude, subsultus, obstinate vomiting and purging, and ends fatally by way of coma.

There may be contraction of the bladder; but, as a rule, towards the end, if unrelieved by the catheter, sensibility being obtained, the bladder is allowed to dilate to enormous proportions. In the majority of these cases the disease has affected the ureters and pelvis of the kidneys; and, as a consequence, the secreting structure of the kidney itself; so that the tubules are often dilated, the cellular elements atrophied, cysts may be present and the capsule adherent.

As a rule an uncomplicated case of cystitis is easy of diagnosis, but it is comparatively easy to overlook some of the diseases that bear a causative relation to it. The limits of this paper will not allow a full discussion of the distinguishing features of these different maladies; but a mere enumeration and brief reference to the salient points of contrast will suffice.

Diseases of the urinary tract, all the way from a diseased meatus up to nephritis, may be accompanied by pain; and, with few exceptions, more or less of this takes the form of irritability of the bladder and is referred to its neck, hence the location of uneasiness alone should not be relied upon in forming a diagnosis. The abundant deposit of phosphates, such as occurs in debilitated states, can easily be distinguished from pus or mucus by the addition of nitric acid and the use of the microscope; in addition to this there would be absence of all the urgent symptoms of acute cystitis. Phyllitis, unless the ureter is blocked up, is productive of a copious sediment of pus; but unless the bladder be involved, the urine when first voided is probably acid in reaction, instead of alkaline, as happens in those advanced cases of cystitis, accompanied by abundant pus formation; further, the albumen test will show much more cloudiness in proportion to the sediment, because the foreign element in phyllitis consists chiefly of pus not supplemented by mucus and phosphates.

Should structural changes take place in the substance of the kidneys, as usually occurs sooner or later in phyllitis, tube casts will be found. Neither will the vesical irritability be so great as in cystitis. Prostatitis, especially if leading to abscess, may closely simulate cystitis, but the distinction may be made by palpation through the rectum.

Calculi, though often productive of cystitis, may exist without it and cause many of its symptoms; but stone in the bladder, as a rule, has less scalding in the urethra, more frequent and copious hæmaturia, and the pain is greatest just after urination, while that of cystitis is temporarily relieved by it. In doubtful cases the sound settles the difficulty, unless the stone is encysted.

Simple irritability of the bladder arising from

prolonged exposure to heat or cold, diuretic medicines, drastic cathartics, hysteria, neuralgic diathesis, or disease of neighboring organs, as hæmorrhoids or prolapsus-uteri, is not likely to be mistaken for cystitis; for the attack is usually transitory, perhaps periodical, and the painful symptoms are the only ones observed.

In regard to treatment of the acute form in its early stage, the indications are all in the direction of the antiphlogistic. Rest absolute for the patient, and as complete rest as can be secured for the inflamed organ—that is, saline cathartics to lessen the blood current and urinary flow—opiate suppositories to allay irritation, hot fomentations and counter-irritants, excepting the cantharidal; demulcent drinks, in moderately small quantities, and milk diet. Hot baths are very serviceable, and, if the urethra and neck of the bladder are not so sensitive as to make it difficult and very painful, it is better to anticipate the excessive contraction caused by distention by the use of the catheter, and for obvious reasons a soft rubber is the preferable: for, as has been said, the spasmodic contraction induces hyperæmia of the mucus lining, causes still further perversion of its secreting function and so aggravates the malady.

As the urine is often highly acid in the early stage, the alkalies would be indicated: and in the later stages benzoic acid to counteract alkalinity: various specifics have been praised— notably buchu, hyoscyamus, uva ursi, lupulin, cubebs, copaiba, and belladonna. Gross thinks copaiba in small and often repeated doses one of the best, if not the best remedy; and, as he thinks that a combination of remedies in this particular disease better than any one individually, he combines the copaiba with, I think, uva ursi and hyoscyamus.

I found in one case the capsules of copaiba, cubebs and santal wood apparently act well. I believe this fondness for copaiba did not originate with Gross, for Sir Astley Cooper used it extensively for the same disease.

Should the collection of mucus and pus be so great as to interfere with free urination, or should there be enlarged prostate with consequent permanency in the depression behind it, it would be necessary to use irrigations, which will be mentioned in connection with the chronic form of the disease. Of course when inflammation of the bladder is a result of other diseases, the cause

must be removed if possible; otherwise the cystitis remains.

Time will not permit of discussing the chronic form of the disease, further than to say, that of course it is characterized by less pain: enormous quantities of sediment, consisting of ammonio-magnesian phosphates, mucus, pus, phosphate of lime, and often urate of ammonia; it is apt to lead to extensive ulceration, when it is considered incurable; may be lighted up into the acute form, when there will occur more pain and less sediment until the acute stage passes off again; and is liable to produce hypertrophy of the bladder, seldom concentric, ordinarily eccentric. It may last for many years in a mild form occasioning only a little inconvenience; or it may, by invading the kidneys or by the constant discharge and pain, so undermine the strength as to lead to a fatal termination.

Prof. Berkeley Hill says the chronic form is eminently curable if the cause be removed and the kidneys are not affected. Even if the cause remain and the bladder be free from ulceration, the affection may be palliated sufficiently to prevent suffering and the shortening of life—a pretty sweeping statement when the long list of remedies is made up, each of which has a sponsor who vouches for its infallibility.

The diet of course must be unirritating, and proper rest must be enforced. The same rules respecting the use of the catheter will apply as in the acute disease, and I conclude from the published convictions of many and from my own experience, that irrigation properly conducted is of more service than internal medication.

Of the remedies recommended to be taken are, in addition to those already mentioned, tannin, nutgalls, tincture of the chloride of iron, Venice turpentine, compound tincture of benzoin, benzoic acid, and acetous extract of colchicum; this last indicated in the gouty habit. Care should be observed in the administration of belladonna, especially to old subjects, as an excess of the drug is apt to paralyze the detrusor urinæ; thus, while allaying irritation, doing more harm than good.

Irrigation is best done by gravity—a syringe is uncertain in its force, while gravity is constant—and may be simple or medicated. I have tried several of the remedies for irrigation and have thought that boiled water was followed by less

irritation than any of them, in one case, at least.

From the time of Sir B. Brodie, down to the present, a $\frac{1}{4}$ gr. to the ounce solution of nitrate of silver appears to have been the favorite, and is said to lessen the quantity of mucus, also the phosphates. I shall simply mention the others:

Permanganate of potash, or carbolic acid, if there is fetor. Heath prefers quinine and dilute sulphuric acid, if there be much pus and ammonia. Devergir used balsam of copaiba, with opium or belladonna in barley water. Either boracic acid, borax, or zinc sulphate is recommended, if there be simply an excess of mucus without other change in the urine.

So much has been said of late of the desirability, in obstinate cases, of opening into the bladder for the purpose of draining, that an expression of opinion from the members, on this point especially, would be interesting; for, at the very best, it is usually an intractable disease to manage. I had intended to narrate two or three cases bearing on cystitis; but, as the paper has unintentionally grown already too long, I shall only relate the particulars of a case in which an accidental complication brought about a cure, and made it self-evident in this particular instance, that any means that can be devised for the constant drainage of the bladder, without the apparatus proving in itself a source of irritation, will solve the problem, how best keep this organ, when inflamed, in a state of perfect rest. Such being accomplished, a case of persistent cystitis, unless the cause be irremovable, would be a curiosity.

Several years ago I attended in labor Mrs. F., a healthy Englishwoman. The foetal head was abnormally large; and, although the pelvis was well shaped, the labor was severe and slow. I tried the forceps—perhaps I used too much traction and too little compression, or perhaps, in my short-sightedness, I misapplied the instrument; at any rate, they slipped, but did not cause any observable external injury, and, luckily for my reputation, as I was then a new beginner and could not have survived many lacerations of the perineum, I then performed version, and without much difficulty. Everything went well until the third day, the urine being voided normally, when to my horror, symptoms of acute cystitis set in, which became aggravated for a day or two, when the strangury suddenly ceased, and the urine escaped per vagi-

na. I introduced a small sound into the bladder, and by conjoined digital examination, found that a very small vesico-vaginal fistula had formed.

By this time, symptoms of endometritis of rather severe character began to appear. Consequently, I was obliged to let the bladder take care of itself, which it did beyond my most sanguine expectations; for while I had to meet the vaginal irritation excited by the occasional urinary trickling, after the uterine trouble disappeared, the cystitis gradually improved; and to cut the story short, the treatment consisted simply in keeping the patient on the side, the occasional application of nitrate of silver to the fistula, and the use of the catheter, together with antiseptic irrigation of the bladder; in about six weeks the fistula closed and the cystitis disappeared.

As this occurred in the neighborhood of ten years ago, and there have been no bladder symptoms since, I suppose it may be set down as a radical cure. It is quite evident that the blade of the forceps, or the pressure of the foetal head, caused a fistula, and gave nature an opportunity, which, she eagerly seized, to cure an inflamed bladder by drainage and absolute rest from contraction.

TUBERCULOSIS.

BY C. W. PURCELL; READ AT FIRST MEETING OF VETERINARY MEDICAL ASSOCIATION IN THE ONTARIO VETERINARY COLLEGE.

(Continued from last issue.)

Prof. Koch, by a special process of staining, has demonstrated the constant presence of peculiar bacilli, in cases of acute tuberculosis, cheesy broncho-pneumonia, tubercular nodule in the brain and intestinal tuberculosis in man. Cats, dogs, monkeys, and rodents were artificially infected and were investigated with a like result.

The bacilli of tubercle manifest themselves in the form of threads of extreme tenuity, in length about 1-5000 of an inch, in thickness about one-fifth their length. They are non-motile, rounded at the ends and generally appear beaded—clear spots alternating with stained parts. They are usually straight but may be curved, they occur singly but sometimes in pairs. They multiply from spores only within the body. They are found in cells of the tubercle, especially giant cells. Growing at high temperatures only, they probably do not

multiply outside the body, but live a wholly parasitic life.

They are destroyed by boiling, also by perchloride of mercury solution, and carbolic acid; but they resist the action of a 1 per 1000 solution of the perchloride, and a five per cent. solution of carbolic acid for some minutes. Drying does not kill the organisms.

Dr. Cornet, of Berlin, has been for two years investigating certain problems in the pathology and therapy of tuberculosis at the Hygienic Institute over which Prof. Koch presides, and a brief result of his work is given in a recent issue of a German medical publication.

The first series of investigations takes up the subject of the presence of the tubercle bacillus outside the body, or in other words, the study of infected localities.

The method employed was to rub down a supposed infected surface with a sterilized sponge, the dust and dirt collected was put in sterilized bouillon, and then injected into Guinea-pigs with proper precautions. Working as he did, under Prof. Koch, it is safe to admit that Dr. Cornet's methods and technique were trustworthy.

The injected animals were killed in about forty days after the inoculation, since within that time only the abdominal viscera can become infected.

In twenty-one wards of different hospitals in Berlin, which were exclusively or in part occupied by phthisical patients, the walls at the heads of the beds were treated in the way described. Fifteen of these wards were shown to contain infective tubercle bacilli.

Active tubercle bacilli were found in a Berlin hotel, in which a phthisical patient had been living, also in a room in which, six weeks before, a woman had died of phthisis.

Of ninety-four animals injected with this matter, fifty-three died with intercurrent diseases; of the remainder, twenty were tuberculous and twenty-two healthy.

The second part of his work is chiefly confirmatory of the observations of Prof. Koch, that the infecting bacilli enter by way of the lymphatics. In inhalation-tuberculosis the bronchial glands are the first affected; while in abdominal-tuberculosis, the mesenteric glands are the first to suffer.

The third part of his work takes up the therapeutical phase of the subject. His method, which

is not a new one, was to give animals certain drugs and then make inoculations of tubercle bacilli, watching to see if the tissues would be so modified by the internal medication as to retard or prevent the tuberculosis.

The animals used were Guinea-pigs and rabbits. The first experiments were with tannin, which was given in amount equal to about two ounces for a man weighing about 125 pounds. The animals became tuberculous in from twenty to thirty-four days. Other animals were given acetate of lead, pinguin, sulphuretted hydrogen water, menthol, corrosive sublimate, creolin, and creosote. They all died of tuberculosis in from twenty to ninety days. Twelve animals were infected with the tubercle bacilli, six of them were sent to Davos, six kept in the cages at the Hygienic Institute. They all died of phthisis and in about the same time.

These experiments were therefore entirely negative, and they go to show that the living body cannot be medicated so as to in any way modify the progress of tubercular disease.

First and foremost among the predisposing causes in the propagation of tuberculosis among bovines, is its hereditary tendency.

Dr. T. Henry Green says: "The influence of hereditary predisposition is so marked that it must necessarily occupy a prominent place in the pathology of phthisis. As to the nature of what is transmitted—although in quite exceptional cases this may possibly be the tubercle bacillus—speaking generally, it is in all probability, simply a tendency to the disease. It may be said that this tendency consists in some feebleness of the constitution in general, and often of the lungs and other organs in particular. As a result of this feebleness, there is usually a want of constitutional vigor, the power of resisting injurious influences is diminished, and the lungs and other organs and tissues which are especially weak, are in consequence abnormally liable to become inflamed. Further, this inherited weakness not only renders certain organs abnormally liable to inflammation, but also abnormally incapable of recovering from the effects of the inflammatory process."

According to Prof. Walley, hereditary tendency may be divided into direct and indirect; the former when it is transmitted by a sire or dam to its immediate progeny, the latter when only transmitted to the second or third generation, constitut-

ing atavism. No predisposing cause with which we are acquainted exercises such a potent influence in the production of tubercle as this; from sire to son, from dam to offspring, from generation to generation—often an unbroken succession—the fatal tendency is transmitted; the more consanguinity is multiplied the more the tendency is increased, and the greater the virulence of the resulting products. No animal whose system is tainted, even in the slightest degree, or in whose history there exists the slightest suspicion of tubercle, should be used for breeding purposes.

Prof. Flint in his "Principles of Medicine" observes as follows:—

"Facts show the tuberculous diathesis in a certain proportion of cases to be congenital and inherited. Why a peculiarity of constitution rendering a person specially liable at a certain age to the development of this disease should be transmitted from parent to child, cannot be explained, more than the fact that peculiar traits of physiognomy or mental character are inherited. The conclusion rests on observation. It is a matter of remark, that the offspring of consumptive parents are apt to become tuberculous."

Dr. Lionel Beale says: "Tubercle and cancer are hereditary disorders, and the immature cancer or tubercle elements may have been transmitted from the parent, and have remained in a dormant state, until surrounding conditions become favorable to the display of their full vigor. This view seems to derive support from the fact that just as in due time, each feature of development appears in the progeny as in the parent, so tubercle appears at a fixed age, which is the same in each."

A remarkable case, proving the transmissibility of the disease from the male parent to the progeny, is published by Zippelius. A stock-breeder purchased a bull, and with him served ten of his cows. The bull was found to be affected with tuberculosis, and for this reason was killed. All the calves of the ten cows which had been put to this bull, had eventually to be slaughtered because of this affection. The first symptoms of the disease in the calves were manifested when they passed to adult age.

And so in human statistics; it is a fallacy to suppose that youth is considered the harvest time of consumption, or middle age the extreme period within which the whole crop is garnered, the

post-mortem records of many hospitals showing that a large percentage of persons who die over sixty years of age are afflicted with pulmonary phthisis; less between the ages of ten and forty than it is between forty and seventy.

It is said that forty is the old age of youth, and fifty is the youth of old age.

The seeds of disease being sown early, the malady matures later in life.

According to abstracts prepared by Goring, on the sanitary condition of animals in Batavia in 1878, 5,052 tuberculous cattle were apportioned as follows:—65 were less than a year old; 551 were from one to three years old; 1,730 were from three to six years old; 2,360 were more than six years old.

Although it is very rare that tuberculosis commences during foetal life, yet it is notorious that a tuberculous cow transmits to its descendants a predisposition to the disease.

Williams says: "It is not only hereditary, but congenital, and he has seen a calf three months old which had thriven well until within two or three days of its death, filled with caseous, calcareous, and grey tuberculous ulcers. In this calf the whole of the serous membranes were affected, which must have been formed *in utero*. The mother of this calf seemed a healthy animal, but was of spare form and had a capricious appetite."

Adam relates an instance from among many others in which the lesions of the disease were observed in a calf which died a few hours after its birth, the mother at the time being affected with tuberculosis.

Semmes relates five cases of phthisis which he met with in the foetuses of cattle, and says these cases sufficiently prove that it can be developed during the embryonic stage.

In human statistics it is abundantly proved that contagious and infectious diseases occur during foetal life, even to the recovery of such without the mother being apparently affected, notably that of variola.

Fleming says: "The influence of contagion on the propagation of tuberculosis has been affirmatively solved, for we have furnished ample proof of its hereditary transmission; this transmission being nothing more than the infection of the ovum of the foetus through the medium of the parents," and further says, "the morbid principle may arrive in

the organism by the respiratory or the digestive track; the inspired air, the food, or the drink may be the medium, and the contagion may also be transplanted by means of the generative organs (through copulation) and by wounds."

In the human family phthisis has not been regarded as particularly contagious, yet it is often found that nurses who have the care of phthisical patients, are afflicted with a cough, even if the germ is not so thoroughly seated as to cause death. It has often been observed that healthy persons who have been companions of consumptives frequently follow them into consumption. So if the opportunities were as favorable to take it from person to person as it is from one animal to another, it would be terribly contagious in the human race.

Chaveau has already observed that heifers that feed out of the same trough become diseased whenever a phthisical animal is found among them.

Grad quotes evidence to prove in the most conclusive manner that not only is the disease communicable by co-habitation of healthy with diseased cattle, but that stalls and stables may become so contaminated by animals suffering from tuberculosis that they infect sound cattle which afterwards inhabit them, until thoroughly disinfected.

When we come to consider the transmission of the disease through the use of milk and the ingestion of diseased meat, we reach a point of vital importance to every man, woman, and child, and the conviction that the consumption of milk of phthisical cattle constitutes a veritable danger, is daily gaining ground.

At the Congress for the Study of Tuberculosis, held in Paris in July of the present year, 1888, it was stated and generally accepted by the members, that a large proportion of sufferers from phthisis acquired the disease through the ingestion of infected milk or meat.

Fleming says: "The circumstances which preserve mankind from the harmful action of milk, are, happily, more easy to realize than those which should guarantee us from the danger likely to be incurred from consuming the flesh of tuberculous animals."

The recommendation not to use milk until it has been boiled, has more likelihood of being observed and is more certain of success than that relative to cooking the flesh, milk being a fluid that heats uniformly, so that we may admit that in boiled milk, every specific principle of tuberculosis is destroyed; but the temperature to which beef is ordinarily exposed in the process of cooking, has been shown to be insufficient to destroy the bacilli.

Nothing has been said in this paper in regard to tuberculous poultry or pork.

M. Moulé, in a paper read before the Congress above referred to, stated that his observations led him to believe that domestic fowls were very frequently affected with tuberculosis, the disease often involving the abdominal organs. Thus *pâte-de-foie-gras* was especially dangerous, being in some cases almost a pure culture of tubercle bacilli.

I have thought best to mention this fact, lest some unsuspecting member of this profession, in a moment of uncontrolled luxuriousness should be tempted to indulge in *pâte-de-foie-gras*.

EDITORIAL

ANN ARBOR AND ITS LABORATORY OF HYGIENE.

IT has been our pleasure during a recent visit in the West to spend a few days in the delightful old collegiate town, Ann Arbor, in the progressive State of Michigan; and amongst its many other attractions, to visit the University and receive the courtesies extended by many of the professorial staff. To those of us accustomed to look eastward, even in America, for our *Mecca* in matters of higher education, it becomes a matter of surprise to learn that we have in the west, in this new State, a

University which, in its several departments, numbers students to the extent of nearly 1,800, or quite up to Harvard, that old centre of university activity. It may be mentioned that the actual expenditure in the various departments amounts to an annual outlay of nearly \$200,000, not including estimates for new buildings. What, as might be expected in so young a university, is most marked, is the absence of a theological course, of the existence of an undue attention to scholastic studies, and a relatively greater prominence given to modern, scientific, and technical studies. In

addition to a law faculty and a very important medical school, there are departments of mechanical and civil engineering, teaching all work from forging and machine-building to constructing buildings; schools of metallurgy and physics, chemical laboratories for several hundred students to work in at onetime, a physiological laboratory, and a new building costing \$35,000, devoted almost wholly to the new department, under the direction of Prof. Victor C. Vaughan, M.D., a name already well known in Canada. Under the latter's guidance we spent a pleasant day inspecting the laboratory building, now completed and comparatively well equipped for all kinds of investigations bearing upon the question of public health. There are three large laboratories, where the professor and his assistants carry on investigations. There growing in cultures of various kinds were specimens of every species of bacterium, which have been studied by Koch, reaching now to the handsome number of 130. Besides, there are several private laboratories for students desirous of carrying on advanced work, under the instruction of the professor's assistants. A general laboratory for class work large enough to accommodate a very considerable number of students, working with the microscope, completes the rooms on the first flat, excepting that to those are added a disinfecting chamber, and a refrigerator room.

On the upper flats are other rooms to be utilized as the future needs of the work may increase, with an animal room, well supplied with animals and everything necessary to keep the room in a healthful condition. We shall be greatly disappointed if much practical good is not the direct outcome during future years, in enabling the public health work of the State to attain to a yet higher position than has even yet been reached under its active Board of Health and enthusiastic secretary, Dr. H. B. Baker.

This old town of 12,000 inhabitants, more than any American town we have recently visited breathes the very air of a seat of learning. Undisturbed by either the mercenary aims of the manufacturing town or the gilded superficiality of the society of larger cities, a studious spirit pervades all classes, and some eighty professors and tutors mix in friendly companionship to pursue their common labors. A night with the "Twenty Club," which contains amongst its numbers mem-

bers of teaching staff on the University Council, was one long to be remembered, where "discourse of reason and flow of soul" recalled years of student-life and dreams of delight in the groves of Academé.

HOW TO UNITE THE MEDICAL PROFESSION.

A SOMEWHAT remarkable paper on "The Means of Effecting the Unity of the Medical Profession," was read as a part of the "Anniversary Discourse delivered before the New York Academy of Medicine," by its president, Dr. B. St. John Roosa, M.D., LL.D., last month. He said, defining the unity of which he spoke, "It is of a unity once existing which allows all those who in any way by their work in life, in studying either the structure of the human frame or causation and nature of disease, are contributing to the mitigation or cure of physical suffering, to unite as members of the medical profession under the common name of physicians." After pointing out how high a social position the physician may and does hold in America, as compared with that of his confrère in England, he indicated how much reason there was for the profession uniting to obtain and exercise that power and influence in many matters which should justly and properly be controlled by them. He said, "Bank presidents are not made of men unlearned in finance; only scholars are professors of Latin or Greek. And yet private and public sanitary affairs, the prevention of epidemics, the government of hospitals, are very often directed wholly, or in part, by men of very good business, military or mechanical training, but with little knowledge of medical matters, but sometimes with professed skill in dealing with a recalcitrant and impracticable medical man. Boards of education, boards of health, sanitary legislation, are often conducted with but a feeble representation of medical men. When a doctor is appointed to a strictly medical position, requiring the highest type of medical learning, skill and experience, it is often because he is a man of attainments of a high order in petty politics, while his medical qualities are correspondingly low. This condition of things obtains because the people as a whole actually believe that the profession, as a profession, knows but little, if any, more about general sanitary matters or medical legislation than a level-headed banker or railroad man, or a successful plumber.

For this state of things, I, for one have no fault to find with the sovereign people. The fact is, that we have for some years demanded very little more of the State than that we should be let alone. We have not until lately asked to have our laboratories or colleges endowed, even by individuals. We have assumed that our colleges are private institutions in which no one but the students who attended them and the professors who owned them were at all interested."

Such opposition resulted in what now exists, and which the better part of the American profession laments, viz., that anyone can get a degree to practice Medicine. The State must be appealed to to remedy such a state of affairs, and to make of the great colleges, universities where young men may enter directly upon professional and post-graduate studies. Referring to places outside of New England, Dr. Roosa remarked, "There are homeopaths and eclectics in Canada and in Virginia and Alabama, where such a system, as the State Society of New York advocates, is in full action, and yet no political difficulty, but the greatest benefit, has been found in the operation of the law." A very strong and effective point was made when the speaker pointed out that in the army and navy a standard was demanded by the Government for their physicians and surgeons. Further on he said, "Certainly the State should restrain mad dogs from running at large, and regulate the storage of gunpowder. The State may certainly not concern itself whether a doctor knows the French language or the fundamentals of good geology; but it certainly should know whether a licensed practitioner can really practice whatever would be everywhere conceded as the essentials of his art." To even the most unreasoning it must seem unanswerable to assert that the general public ought to be protected by law, even when not demanded through their ignorance and indifference, and the time has indeed passed when believers of gifts in healing, and "the seventh son of the seventh son" can be allowed to practice upon the credulous to the general detriment of the public health. "There is really no subject in which the community at large has a more vital interest than the quality of its medical men. Everyone, except an occasional railer at our impotence, who mourns that we cannot compass the infinite and cause men and women to avoid

the awful but irrevocable truth, 'What a man soweth, that shall he also reap,' realizes that physicians are important as individuals to the general public; but it is for our recognition as a great factor in the various parts that make up the edifice that we call the State, that I plead."

The plea so powerfully and eloquently set up for the unity of the profession in the United States by raising, in some degree, the legal status of the profession, does not in the same sense or degree, exist in Canada; but any one who observes the many and diverse currents influencing medical thought and practice in Canada, cannot but feel that unification is in large degree yet to be accomplished here. Too often are medical men set in opposition to each other through the injudicious action of themselves, and especially of their friends; instead of recognizing in a broad way the many-sided work of the profession, each is too often led off into some by-path, or in earnestly following the truth in one direction, loses a view of its other phases. Elevation of the dignity of the profession by every avenue open to it, will prove the only means by which its unity can become in any degree complete or its aspirations fulfilled.

PROVINCIAL MEDICAL LIBRARY.

AFTER some delay, largely on account of the uncompleted building of the College of Physicians and Surgeons, the library has become an established fact, and with November its doors were opened to its members, to come, it is hoped, from all parts of the Province. In addition to the Committee with its Secretary and Treasurer, a lady librarian has been appointed to be on regular duty, so that the members may at any time obtain the privileges of the reading room. This is fitted up with extensive shelf accommodation and ample table facilities for the very fair collection of exchanges and regular medical periodicals. The collection so far includes a very considerable number of old standard authors and magazines; but requires a very considerable addition of new works before it can be said to be to any extent complete. But for that matter, indeed, a library can never be complete. The rooms of the Toronto Medical Society are on the same floor and the convenience of its members has been fully consulted. Slips are supplied to any physicians wishing to add works to the library, and the hearty

Thanks of the Association are given to all such contributors. We understand that a very considerable collection of exchanges and other works has been deposited by the Provincial Board of Health in the library for the use of the Association. Cannot others with collections similarly lend them for the benefit of the members, thereby aiding the committee in the very commendable work they have undertaken?

PUBLIC VACCINATION.

ONCE more and, as remarked by the *British Medical Journal*, probably for the last time a vote has been raised in the House of Commons on vaccination. While the question raised was primarily one for grants and aids, introduced by Mr. Bradlaugh, yet as might have been expected, the question of efficacy was dragged into the discussion. Dr. Macdonald objected to public vaccination on the ground that it was an interference with the work of the private practitioner, and Mr. Picton said that practitioners had to be bribed to do the work properly.

Our readers will naturally be amused at the idea of any objections being raised on these grounds, and after such will not wonder that a Dr. Fitzgerald should have stated that syphilis is often communicated by vaccination, or that the absurd argument of Dr. Gavin Clark should have been adduced, viz., that while the small-pox death-rate had been reduced by vaccination, that from scrofulosis, consumption, etc., had been increased. As was to be expected, the termination of the debate was marked by an expression of opinion so strongly in favor of the vote for the public vaccine farms, and of compulsory vaccination—there being only forty-five members to support the vote against the grants—that the question, the *Journal* thinks, will not soon again be raised.

The present time is, however, opportune for some remarks upon this subject, inasmuch as the several small-pox outbreaks in Canada have brought the necessity and practice of vaccination prominently before both the medical and general public. It will not have been forgotten that the enormous demand created for vaccine by the Montreal epidemic and the failure to some extent of the calf-lymph supplied at the time by American vaccine farms, created a demand for Canadian vaccine farms. This

want has been supplied by two excellent farms, one at Palmerston, Ont., and the other near the city of Quebec. In the case of the Ontario farm, at any rate, it has been found that with facilities for supplying lymph to any extent that the demand may call for, the absence of small-pox outbreaks since 1885 up to the present has made the call for vaccine most irregular, and consequently unprofitable. The last three months have, however, caused, we understand, a steady demand, with results on the whole most satisfactory.

In the discussion already referred to it was remarked by the *Journal* that, apart from the question as to whether vaccination would be as generally done were it left to the private practitioner, the vaccination of communities can only be adequately performed when there is opportunity for arm-to-arm or calf-to-arm vaccination; and it is evident that the private practitioner must largely depend on the use of stored lymph. Again, the public vaccinator has a larger number of cases from which to select his vaccine, and the interests of the public must be first considered.

The argument, as thus stated, not only for state aid for the supply of lymph, but also for systematic compulsory or regular vaccination at set times when a supply of fresh vaccine may be assured, is, we take it, complete and corresponds perfectly with what our experience has taught us during the past six years in Ontario.

The question of the operation of vaccination is, however, one in itself of much greater importance than it is considered by very many of those who perform it. Whatever be the exact nature of the specific virus, whether a micro-organism proper, or its leucomaine, certain it is that it is in the very nature of things extremely subject to those modifying influences which affect the stability of constitution of any microbe or of its vital processes. Removed from the medium in which it has multiplied and completed its life, the lymph, an organic fluid, with its contained active principle, is suddenly completely changed in its environments. At a temperature lower than that of the blood, yet with a readily-changing fluid medium, it is exposed to oxygen and other atmospheric influences. If taken fresh from a mature vesicle, it is laid in a thin film on an ivory point, thus being exposed in the best possible manner to direct contact with the air. If not rapidly dried at a low temperature rapid

changes in its constitution will have already taken place; just as we see takes place in a few hours in the ruptured vesicle. If, however, to such hurtful influences we further add that the lymph has too frequently in the past been taken from a vesicle which has been pressed until blood corpuscles are present in the lymph, or from a ruptured vesicle which has become pustular after rupture of its walls, it will not be difficult to understand not only how lymph may become altered and wholly or partially inert, producing no result or only the fashionable mulberry appearance; but also how septic matters may be mixed with the lymph of inoculation. We have stated the case strongly from the biological standpoint in order that those of the profession who have not—and there are many—had the opportunity of studying the question of vaccinia inoculation may realize not only the reason why vaccination may become prophylactic, but also of the dangers which through ignorance or carelessness may attach to the process. Is it to be wondered at that practitioners should dislike being troubled with an operation

which demands so much care? If they use points on hand more than a few days they get no result, or if any, then an altered and imperfect result. If again the patient abuses the directions of the physician—or unfortunately when the latter has neglected to give any—and gets damp during the febrile stage, or continues at muscular labor or exercise with his arm during this period, local irritation often of a serious character follows; and the physician, the vaccine, and the principle, are attacked in unmeasured terms. With all these facts before us, it has been a source of the greatest surprise that, with the many thousand vaccinations performed during the past few months in Ontario, more accidents from such causes as have been enumerated have not happened. We are confident that the more systematic, in the matter both of practised operators and stated seasons, vaccination becomes, the more successful will be the results and the fewer will become the complaints of untoward results attaching to this beneficent protection against one of the greatest scourges in the world's history.

INDEX OF PROGRESS

MEDICINE.

Rules for Altitude Treatment of Pulmonary Tuberculosis.

Dr. Frederick I. Knight, Clinical Professor in Harvard University, Boston, recently read a paper before the American Climatological Association, in which he gave the following rules which his experience has found a useful guide in recommending to patients a change of climate:—

For the sake of convenience, I will make use of the types of the disease employed by me in a previous paper.

1. Patients presenting the earliest physical signs of tuberculosis of the apex, who have as yet shown little, if any, general disturbance from the disease, and who complain only of morning cough and expectoration.

These are the patients who are known to recover under a great variety of conditions, both climatic and social; but it seems to me, after considerable experience, that a larger proportion have recovered under the high altitude conditions than under any

other. With a few exceptions, such as for general reasons previously mentioned, I should recommend high altitude for these cases.

2. Patients with more advanced disease, showing some consolidation, but no excavation, nor any serious constitutional disturbance.

High altitude is suited to many of these cases also; but if a considerable area of one lung, or the apices of both are consolidated, if the pulse and temperature are both always above 100, it may be well to try some low altitude first. When quiescence in the morbid processes is established, a change to higher altitude can be made.

3. Hæmorrhagic cases. Patients in whom pulmonary hæmorrhage has been, perhaps, the earliest, and a frequently recurring symptom, but in whom there is, as yet, no marked febrile reaction, nor much physical evidence of disease.

In my experience this class has done particularly well in high altitudes. The tendency to hemoptysis seems to be diminished rather than increased. This seems to me to be explicable more through improvement in nutrition of the lung parenchyma

than by change in the atmospheric pressure, for the lung cannot be considered an internal organ, as far as atmospheric pressure is concerned, but must be considered as subject to the same pressure as the skin, and, therefore, in high altitude more liable to superficial congestion and hæmorrhage. Theoretically, therefore, there was good reason for the old custom of avoiding the sending of such patients to the mountains, but practically I have never experienced ill results from so doing.

4. Patients with advanced disease; those with cavities, or severe hectic symptoms.

Patients with advanced disease, or, better stated, with great area of lungs involved, should not be sent to high altitudes. The demand for increased respiratory activity, which cannot be answered, is apt to be quickly followed by fatal result. The existence of a small cavity, in a case in which the disease had become quiescent, would not contra-indicate high altitude. Hectic symptoms would do so.

5. Patients in an acute condition.

None of these should be sent into high altitudes.

6. Cases of so-called fibroid phthisis or interstitial pneumonia.

If the patient is over fifty years of age, if his heart is dilated, or if there is great bronchial irritability, producing harassing cough, he should not be sent into high altitude.

7. Patients convalescent from acute pleurisy or pneumonia, in whom the eruption of tubercle is dreaded.

Unless otherwise contra-indicated, elevation is particularly suited to this class of cases.

8. Patients in whom the tubercular process has seriously invaded the larynx.

It is generally recommended by those familiar with them, that these patients be not sent to high altitudes. In view of modern methods of local treatment, they certainly should not be sent there to the deprivation of this; but should they be sent to high altitudes if they can also have the benefit of good local treatment? With others I have been prejudiced against sending these patients to the mountains, but it may be that this prejudice is groundless for high altitudes which are free from dust, and that they do no worse here than anywhere, the disease when it has once seriously attacked the larynx usually pursuing an unfavorable course. I know that some of the resident physi-

cians of high altitudes do not share this prejudice.

9. Those with complications of other diseases.

Much care should be exercised in regard to cases of this class.

One of the first in importance to suggest itself will be cardiac disease. Cardiac dilation should preclude the consideration of altitude; and it would be safer to say the same in regard to most cases of hypertrophy, though if this be moderate and of slow development, the patient might be allowed some elevation. There are many patients, however, who are unwarrantably denied the benefit of high altitude on the ground of heart disease, e.g., patients with a cardiac murmur the result of endocarditis quite long ago, in whom there is no evidence of deranged circulation, and no sign of cardiac enlargement. Of course, the mere existence of a murmur is no evidence of cardiac condition liable to be unfavorably affected by rarefied air. On the other hand, there are some patients with nervous derangement of the heart who had better be advised against high altitudes. These, however, would usually be of the general neurotic type before spoken of.

Disease of the large bloodvessels is an evident contra-indication.

Patients with bronchial dilation or pulmonary emphysema are not usually recommended to high altitudes, presumably on account of diminished respiratory area. I have not had much personal experience with such patients in high altitudes, but would like to hear from those who have had. There are some with excessive bronchial irritability who certainly do better in lower regions.

In regard to renal disease, while it is admitted by resident physicians that acute nephritis, like acute pneumonia, is severe in high altitudes, they claim that chronic nephritis is often benefitted.

Intestinal ulceration would not contra-indicate a high altitude, but no great good could be expected from the change.

In cases of epilepsy, diseases of the brain and spinal cord, which are said by some to contra-indicate altitude, I have had no experience.

It looks to me as if the claim that heredity is a contra-indication of altitude must have originated in the mind of one who was afraid lest his percentage of cures should be lowered by bad cases, for, while admitting the patients with hereditary tendency to tuberculosis are on that account less favor-

able for any treatment, when taken in hand early they are especially benefitted by mountain-air life.

Diabetes would seem properly to contra-indicate high altitude treatment, as its subjects are very liable to succumb to attacks of any acute disease, and these would be more liable to occur in a variable than in an equal climate.

Upon what grounds syphilis is put down by some as a contra-indication I know not.

The combination of tuberculosis and syphilis is a very unfavorable one, and liable to result badly in any climate.

Erysipeloid Affections Following Vaccination.

Gatzin, in *Deutsch Med. Zeit'g*, has discussed this subject, and says the subject needs more attention than it has yet received. Authors are not by any means agreed as to the nature of the red areola. Erysipelas is the most important complication, and oftenest, he thinks, when animal vaccine is used. The question arises as to whether erysipelas in all such cases is the result of accidental infection; or, as Bohn asserts, the potentiality of erysipelas exists in vaccinal lymph itself, and points out the late extension beyond the primary reddened area with high fever and swelling as a proof of this.

Research on the subject is greatly lacking, and as Gatzin says, we can only expect a solution along the lines of bacteriological research.

Many have recently been discussing what is the normal course of a primary vaccination. Best observation gives the following: 1, a small papule on fourth day after inoculation; 2, it becomes a vesicle within 24 to 36 hours; 3, the inflammatory process producing the vesicle develops in a centrifugal direction, thereby raising the papule on a red base; 4, with the increase in size of the vesicle up to the seventh day, the circular dermatitis keeps extending, recession not beginning usually until the tenth day; 5, this is marked by the centre near the pock becoming lighter, thereafter the circumference also, and on the tenth day there is frequently observed near the cloudy pustule a pale-red or colorless areola, surrounded by a red ring three or four centimetres from the middle point; 6, finally the regeneration process begun in the pustule on the eighth day goes on to drying, crusting and scarring.

Gatzin thinks the initial exanthem, both in

variola and vaccinia, to be nothing more than an exanthem form of the pock—in other words, the process in both diseases is of a highly erysipeloid character. Or the bacteria of these diseases belong to the class capable of inducing erysipeloid processes, as Koch and Loeffler have shown is present in mouse septicaemia and in hog-erysipelas. Assuming these views regarding the erysipeloid character of the vaccinal dermatitis to be correct, those who have much experience in vaccination, notably amongst the working classes, are aware that severe erysipelatous inflammation has in not a few cases supervened, which may very properly be called accidental infection. The surprise is that it is not more frequent, since not only is the vaccine inflammatory process by exercising greatly increased, but friction also breaks the vesicle, while the filth from the skin or clothes, must often introduce material of a septic character into the abrasion. Much has been said regarding the necessity of pure lymph for inoculating, but almost nothing regarding the necessity for antiseptic precautions in the later stages of this inflammatory disease.

Hyperpyrexia in Typhoid Fever.

Dr. J. M. Muselli published in the *Journal de Medecine de Bordeaux* some interesting clinical observations on this question, of which we report the following conclusions:—1. Hyperpyrexia is a danger in typhoid fever, from its effect upon the intestines, the heart and the entire organism. 2. The hydropathic treatment, when employed by cold baths, after the method of Brand, exposes the patient to such grave dangers as sudden death, internal hæmorrhages and capillary bronchitis. There is a very slight action on the temperature when it is used in the form of tepid baths and warm and cold sponging. 3. Sulphate of quinine loses very quickly its anti-thermic action, since in a few days the temperature lowered for a short time regains its former height. Its action is not always certain, even in enormous doses. Also, the sulphate of quinine, given in large doses may cause such accidents as trouble with the hearing and headache which disturb the patient and necessitate the suspension of the remedy. 4. Salicylic acid has an uncertain action upon the temperature. Besides, it increases the danger of intestinal hæmorrhages and epistaxis. 5. Antipyrine lowers the tempera-

ture with mathematical precision. It causes a typhoid fever to run its course with a moderate temperature without exposing the organism to any grave dangers. It is, in the opinion of the author, the best antipyretic medication with which he is familiar.

SURGERY.

Electrolysis in Angioma and Goitre.

A paper on this subject was read at the recent medical meeting in Glasgow, by J. Duncan, LL.D., M.A., F.R.C.S.E., Edinburgh. It included first the description of several peculiar forms of naevi or congenital capillary angiomas. One was a delicate pink-looking angioma over the cheek of one thigh as high as the buttocks; another, a tumor the size of an orange in a child three months old, and situated behind the ear; and a third, a part of which occupied bone on the outer side of the foot. In each case applications were successfully applied, and the tumors were reduced; in some instances, as No. 2, a complete disappearance taking place.

Several pulsatile tumors were similarly treated, also in a cirroid aneurism, affecting the left temporal artery and extending to the occipital on the same side. In the latter several tortuous branches of the anterior temporal were first obliterated, and after several sittings final and complete success was obtained.

These cases, with others given, may serve to illustrate the value of electrolysis as a means of treatment for vascular tumors. More than two-thirds of Prof. Duncan's operations for vascular tumors during late years have been by electrolysis. The rules for treatment by electrolysis, which is the only treatment possible for naevi, present the following characteristics, viz.: 1, That the growth is extending; 2, that it is important to avoid a scar; 3, that the subcutaneous bears a considerable proportion to the cutaneous part of the tumor. If the growth be not extending, it is unnecessary to interfere, because more than half the total number of the naevi of the mixed and subcutaneous type spontaneously disappear. An artificial dermatitis long maintained may sometimes remove naevi of a port-wine color, but except where the creation of a scar makes no difference and amputation is possible, electrolysis is the only successful and safe method.

Regarding the method of operation pursued by

Prof. Duncan, he states that he works habitually with a current of between 40 and 80 milliampères; but that is really a matter of small importance. A galvanometer is of no value in operations where the duration is determined by the palpable and visible effect produced. It is very different in cases where you cannot see and feel the gradually increasing swelling, tension, and hardness. Then a means of measuring the amount is essential. Four to eight cells of large size and good electro-motor force are most convenient to work with. It is not necessary to use a large number of cells if both poles be introduced as they ought to be. The body is as good a conductor as acidulated water if the resistance of the skin be avoided. Introduce both electrodes (insulated so that the operation may be truly subcutaneous), but he works chiefly with the negative pole. It is to be remembered that the effect is produced mainly by shriveling up and destroying vascular walls and that coagulation of the blood is a matter of very secondary importance, therefore, he keeps moving the negative pole about and penetrating as many vessels with it as he can, because its destructive effect is more powerful and diffuse than that of the positive. He maintains it in one place just long enough to bring about a radical effect and then to another.

Naso-Laryngeal Intubation in Diphtheria.

Ridge (*Brit. Med. Jour.*) describes the new form of intubation of the larynx, which he styles nasolaryngeal. It consists in the introduction of a gum-elastic, silk catheter into the larynx through the nostril. He has intubated by this method four times in laryngeal diphtheria. Though all the patients died after a few days, the life of each was prolonged by the operation. He has modified his first thought-of method to the following, which he holds has great possibilities: "I have cut off the eye [of the gum-elastic silk catheter], and introduced the end furthest from the eye, which is nicely rounded off and smooth, and, of course without any bone tip. It is slipped along the nostril easily, and the forefinger of one hand guides it into the larynx. I have also procured a smaller long tube of the same material, which slides easily down the lumen of the larger tube, and have made several perforations in the side near one end. This end I propose occasionally to pass into the

larynx, and then to withdraw the larger tube a little way until the end is out of the larynx. Through the smaller tube I shall then inject a small quantity of solution of hydrogen dioxide, as a powerful and non-irritating antiseptic, which will thus be brought into actual contact with the interior of the larynx and the false membrane. As the small tube will be in the larynx, it will act as a guide to the larger, which can then be pushed back into its place, after which the small tube will be withdrawn."

He advises, also, what he has not yet tried, the passage at the same time of a similar catheter into the œsophagus by way of the other nostril, through which food may be administered. The tubes are to be kept *in situ*, plainly marked, to avoid accident. Chloroform is administered, and a piece of wood placed between the teeth as a gag, prior to intubating.

Diagnosis of Abdominal Tumors.

Minkowski, in studying the diagnosis of abdominal tumors, shows that an important and decisive point consists in the inflation of the stomach with carbolic acid water, or the colon with water, which causes the tumors to assume characteristic alterations of position. We leave out frequent qualifying and exceptional statements, and summarize the principal results:—

1. Liver tumors move upward and to the right by gaseous distention of the stomach. By distending the large gut with water, the under border of the liver simply curves forward.

2. Tumors of the gall-bladder behave in general like those of the liver.

3. Spleen tumors, by inflation of the stomach, pass to the left, and often, also, a little downward. When the bowel is distended, the spleen ascends, and usually, also, passes to the left.

4. Inflation, in gastric tumors, may bring the contours of the organ into prominence, and thus render the decision more simple. Tumors of the pyloric region usually move during distention to the right and downward. But as tumors of the transverse colon and great omentum may behave in the same way, the bowel injection may aid in the differential diagnosis. Under this, stomach tumors move upward, and become distinguishable from the filled colon.

5. Tumors of the large intestine become recognizable by filling the bowel. Tumors of the

transverse colon pass downward by stomach inflation.

6. By inflation as well as by injection, tumors of the great omentum are shoved downward and pressed strongly against the anterior belly wall.

7. Injections are of the greatest importance for the diagnosis of renal tumors. They remain usually unaltered by inflation of the stomach. By injection they seem to move a little upward at first, then become scarcely feelable, and disappear in the deeper parts.

8. Ovarian tumors were also found to move forward, a little upward, and were shoved to the side of the diseased ovary.

Operations for Varicocele

Various methods have been practised, but two, that of curtailment of the scrotum and subcutaneous ligature, now prevail. According to E. L. Keyes, M.D., the latter is much the more preferable. Catgut as a ligature failed, but silk succeeds, remaining and becoming encysted. He has never had in fifty cases any complications in the way of pus or unwonted inflammatory action. He has on several occasions ligated the whole cord excepting the seminal duct, passing one ligature to the outer side of the vas deferens, another to its inner side. He has never had atrophy of the testicle occur. Coarse Chinese silk is prepared by boiling, and preserved for use in alcohol. Complete asepsis as regards instruments and parts is practised. The needle is a straight one in a handle, the eye being opened and shut as in Reverdin's needle. The eye is kept closed and the needle charged with silk is introduced. After this the thread is taken from the needle, the needle then partially withdrawn and carried around the veins to emerge at the original posterior puncture, when the silk is introduced and the whole withdrawn. The silk is then very tightly tied, cut short, and the knot tied, cut short, another knot allowed to sink within the scrotum. Rest for a time and support are practically with a laxative or anodyne all the after treatment required.

THERAPEUTICS.

Creolin as an Antiseptic.

A detailed series of experiments have been made at the Vienna Hygienic Institute by Eisenberg on this substance. In *bouillon* culture it was found that a 2 per 1,000 mixture of creolin killed the

cholera bacillus and the streptococcus of pus and of erysipelas within two minutes, the bacillus of anthrax in five minutes, but the typhoid bacillus and the staphylococcus of pus were alive after an hour. It is much more effective than carbolic acid, a 3% solution killing anthrax spores in two days, while an 8% of carbolic had no effect in seven days. It is not poisonous, and may be given in large doses to dogs without injury. Eisenberg recommends it in place of corrosive sublimate, carbolic acid, and iodoform in surgery.

Hydrastis Canadensis and *Viburnum Prunifolii*.

In the *Internationale Klinische Rundschau*, Nov. 26, 1888, Prof. Schatz speaks in the highest terms of the use of *Hydrastis Canadensis* in controlling hyperæmia and conditions of chronic inflammation of the internal genitals. He explains the occasional failure which has followed its employment by German physicians from the fact that the preparation that they have used was not manufactured from the fresh plant. The latter preparations, he claims, are perfectly astonishing in the marked results there produced. In uterine myomata the menstrual hæmorrhages are reduced and regulated, but he states he has even seen a case where the myoma extended to the umbilicus, and which, after the regular use of about three pounds of the fluid extract, in two years almost entirely disappeared. He further confirms his early statement that hydrastis does not produce uterine contractions, but only leads to reduction in the calibre of the blood-vessels.

Cardiac Tonics.

Prof. Eichhorst, of Zurich, having made comparative observations on strophanthus, digitalis, caffeine, spartein, adonis vernalis and convallaria majalis, has arrived at the following conclusions :

1. Digitalis and strophanthus both control the heart in the same manner, slowing, regulating and toning up its activity, and thus under certain circumstances increasing diuresis.
2. Digitalis acts more rapidly, and on the whole with more certainty than strophanthus.
3. Strophanthus is superior to digitalis in that it does not develop cumulative effects. After six weeks use its favorable effect upon cardiac contraction was shown by sphygmographic tracings. In some cases it acted more favorably than digitalis.

4. Spartein sulphate has only a weak and unimportant action on the heart, and exerts no influence upon the renal functions.

5. Caffein has still less action on the heart than spartein, but is an excellent diuretic.

6. Adonis and convallaria are unreliable in their effect upon the heart and kidneys, and in addition often cause nausea and vomiting.

In connection with these clinical observations, reference may be made to the pharmacological and chemical researches of MM. Catillon, Blondel, Bardet and Adrian, who have shown that the strophanthus found in the markets differs very widely in the proportion of strophanthus contained in different specimens. In ten varieties examined by Catillon the proportion of strophanthus varied from two to fifty per mille. It is very probable that the divergent results obtained by different clinicians are due to the uncertainty of composition as shown by the researches mentioned.

Use of Terebene.

D. M. Camann, of New York, referring to this subject, spoke of the well-known effects of the terebinthines and the benefits, to consumptives from inhaling the air of pine forests. This air, probably both aseptic and antiseptic, owes its purity to peroxide of hydrogen. It is stated that each molecule of turpentine gives rise in the presence of air and moisture to a molecule of peroxide of hydrogen. This property of turpentine is possessed by terebene, benzene, eucalyptol, and many other essential oils. Peroxide of hydrogen thus has an atom of oxygen readily given off in presence of such substances as pus and blood. Terebene due to this cause has high deodorizing powers, quickly destroying the odor of most offensive wounds. Given internally it is antiseptic, expectorant, and diuretic, relieves flatulence and is readily borne by the stomach. It hastens the absorption of adhesions in pleuritis. Its value in winter coughs has been recognized by Murrell of London; and in forty cases, records of which have been kept by Camann, of various forms of lung trouble.

Lanolin in Cuts and Burns.

A recent article in the *Pharmaceutische Rundschau*, No. 3, March, 1888, states that experience has shown that lanolin is an excellent dressing for cuts and burns. Professor R. Frankel finds that it prevents the formation of scabs, and that burns.

under this treatment do not desquamate so much as under most others. In cases where it is desired to irrigate a wound in order to reduce heat and irritation, lanolin may still be applied, as it is not readily washed away. If a small wound is immediately dressed with this ointment basis, hæmorrhage is stopped.

ELECTRICITY.

The Electrolytic Decomposition of Organic Tissues.

Through the kindness of our old friend, George H. Rohé, M.D., Baltimore, we have received a proof copy of his Annual Address as President of the American Dermatological Association. We regret that space will not admit our insertion of the address as a whole, but we present some parts more particularly devoted to its practical aspects:

Pure water is said not to be an electrolyte, inasmuch as it is a non-conductor, and all electrolytes are conductors. Yet water, slightly acidulated with sulphuric acid, is used as the electrolyte in voltameters, and most of the laws of electrolytic decomposition have been deduced from observations upon this medium. There is no question that water, holding either acid or a salt in solution, is decomposable by an electric current of sufficient potential difference. Whether the electrolytic action in this case is the result simply of the higher conductivity of the water, or whether the acid or salt perform some other part in the process, is not known. It seems probable that the additions to the water promote electrolysis by increasing the conductivity. There is reason to believe, however, that even absolutely pure water is not entirely resistant to the electrolytic current.

According to one of the laws of electrolysis above quoted, there is no actual transference of ions through the electrolyte. But there must be some molecular change going on between the ions, otherwise no conduction of current could occur. Visible decomposition, however, occurs only at the electrodes. It is not yet satisfactorily established whether the molecules of compounds are all in a state of stable combination, or whether Clausius's theory of free molecules in a compound may be invoked in explanation. If the latter is the case, we may represent to ourselves the molecules being brought into line by the current and advancing toward the electrodes in opposite directions, the electro-positive elements, or ions, going with the

current, or "down hill," as Dr. Dodge has cleverly suggested, while the electro-negative elements travel against the current, or "up hill."

It seems to have been clearly established by numerous experiments that galvanic conduction through liquids is always electrolytic; in other words, there can be no conduction of an electric current through a liquid without that molecular rearrangement in the field through which the current passes, and that molecular disintegration at the surface of the electrodes which we know as electrolysis.

If this is true, and there is no reason to doubt that it is, many of the current notions of the physiological action of the galvanic current upon organic tissues require modification. We shall be obliged to assume that every time we use the constant galvanic current for therapeutic purposes—whether to relieve pain in a nerve, to stimulate nutrition in muscle or other tissue, or to perform what we are now accustomed to call an electrolytic operation—we are performing electrolysis in all cases, for the human body may be regarded as a large and exceedingly composite electrolyte. Upon this hypothesis distinct and very marked advances may be expected in our applications of the galvanic current in the treatment of disease. The various processes supposed to go on in the body under the influence of an electric current, and termed by different authors electrical absorption, electrical osmosis, and electro-catalysis, will properly be ranged under the single conception of electrolysis. It must be evident at first thought how much such a conception will simplify and render explicit a subject, upon which there is at present much loose thinking and vague writing.

With this preliminary discussion of the physical facts and principles of electrolysis, we are prepared to enter upon the study of this process as applicable for the decomposition, destruction, or modification of normal and pathological organic tissues.

Organic tissue is an electrolytic conductor—*i.e.*, a current can pass through it only by electrolytic decomposition of its compounds, in accordance with the law that "the electricity does not flow *through* but *with* the atoms of matter which travel along and convey their charge."* This does not mean necessarily that the atoms travel throughout the entire distance from one electrode to the other,

*Lodge, "Nature," 1897.

but that they give off their charge to the next in series, and so on to be passed along to the end of the electrolytic circuit, where the electricity is either given up to the electrode or converted into another form of energy by a combination of the carrying atom with others.

Hitherto the human body has been measured electrically merely as a conductor or as a resistance, but the more rational proceeding would seem to me to consider it as an electrolyte.

In electrolysis of organic tissues there are probably several processes to take into account. In the first place, it is extremely likely that the water of the tissues with certain salts, acids, and other compounds in solution yields to the disruptive power of the current, and hydrogen with other electro-positive ions are set free or recombined at the negative electrode, while oxygen and negative ions are separated at the anode.

But while this liberation of atoms and molecules takes place at the terminals of the battery, what is going on in the track of the contrary processions of ions between the electrodes? In other words, is there any interpolar action of the current, and in what does it consist? In my opinion, there is of necessity a loosening or shaking up of the interpolar compounds which results variously according to the vitality of the tissues. If the current is of moderate strength and the tissues have the normal degree of vital resistance, the molecular disturbance will probably result merely in an improvement of nutrition, in accordance with the general biological law that moderate stimulation produces increase in nutrition. If the current is of excessive strength, there will probably be some breaking up of compounds which may effect nutrition unfavorably. I think every one who has used electricity much and observantly must be able to recall cases where this explanation would be at least a plausible one.

Actually, we know really nothing of the interpolar effects of electric currents in organic tissues. In inorganic compounds, with their simple and stable organization, the electric current may not produce any interpolar change, although the theory of Clausius rather favors the view that interpolar decomposition occurs; but in organic compounds, with their more complex and unstable composition, we can readily understand that the continual rearrangement of molecules under the influence of electrolytic conduction may so disturb the harmoni-

ous relations of the molecules as to render decomposition more easy. If the tissues are normal, recovery and repair of slight defects may promptly follow, but in the case of pathological products—inflammation, infiltration, new growths, serous effusions, etc.,—it stands to reason that a molecular disturbance of some extent or continued for some time may produce such a modification of nutrition in the tissue as to promote its regressive metamorphosis. That this actually takes place I firmly believe, although I am unable to give an exact demonstration of the process. I am also strongly of opinion that in many pathological products or tissues a retrogressive change begun under the influence of an electrolytic current is kept up after the immediate action of the current has been discontinued. I need only refer here to the numerous examples of cure of new growths, inflammatory deposits, and serous collections on record. A brief reference to one case under my own observation may not be out of place here. In 1886 I gave a partial report of a case of goitre treated by electrolysis. The tumor grew smaller under the applications, but the diminution in size did not cease with the discontinuance of the treatment. The regressive tendency set up continued until at present the tumor has almost, if not quite, disappeared. Similar results are alleged by gynecologists who have properly used the electrolytic method in fibroid tumors of the uterus according to the method of Apostoli. My friend, Professor Hardaway, has reported analogous results with cases of keloid and hypertrophic scars, and my experience with such growths as fibromata, vascular nevi, epithelial and papillary neoplasms is strongly corroborative. At first I was disposed to attribute this continued effect of the electrolytic applications to a condensation of connective tissues robbed of part of its nutrition, but further study has led me ascribe a share of the result to the continuous modification of vital activity impressed upon the tissue by the electrolytic current. The progressive disappearance of serous collections (hydroceles, arthritic effusions, cysts of various kinds), and of inflammatory infiltrations after interruption of the electrolytic séances must, I think, be attributed to a similar action. On no other hypothesis known to me can these results be so rationally explained.

In the electrolytic action most frequently made use of in dermatological practice—namely, extirpa-

tion of superfluous hairs—we have normal tissue to act upon—one, in addition, which is very resistant to external impressions, and readily regenerated. Here we need strong currents, because the tissues have normal chemical and vital stability, and we must produce complete destruction of the papilla if the hair shall not be renewed. It is not improbable in this case that the electrolytic action may continue after the cessation of the operation, although I am inclined to attribute little effect to this.

For the destruction of new formations, the more succulent and of lower vital resistance require less current strength than those composed of the more resisting tissues, such as fibroids and vascular growths. Fibro-pigmentary growths (pigmented naevi) are usually very resistant to electrolytic destruction, and require strong currents and thorough application to the whole affected surface if good results are expected.

In stricture of the urethra we have pathological conditions which should react favorably to the electrolytic current. Excluding stricture due to traumatism or to ulceration of the mucous membrane, the pathological condition consists in an inflammatory new formation in the submucous tissue. The removal of this infiltration by absorption is rationally indicated and after in most methods of treatment of stricture. The method of gradual dilation by means of sound can only be justified and explained on the score of causing absorption of the submucous infiltration. The very uncertainty of this method shows that it fails to bring about this absorption in so large a proportion of cases. The method of cure by internal urethrotomy seeks to produce such a change in nutrition that the inflammatory neoplasm will be absorbed and the normal calibre restored. Those who hope to widen a strictured urethra by a cutting operation with a view of inducing nature to insert a strip of cicatricial tissue between the borders of the incision, have a childlike notion of pathological anatomy that no time need be wasted in paying attention to their opinion. All surgeons who study pathology practically, and not transcendently, will agree that the only possible way to cure a stricture is to cause absorption of the submucous inflammatory deposit. No method promises theoretically to accomplish this so safely, promptly, and thoroughly as electrolysis.

Upon the principles stated in the foregoing pages, this method seems the most rationally indicated one. The electrolytic current promotes absorption by causing a chemical resolution of the inflammatory infiltration. And this chemical resolution of the pathological tissue I believe possible without unfavorable influence upon the mucous membrane covering it. Of course, the strength of the current must be properly graded to secure this most desirable result. The statement sometimes made that electrolysis in stricture can result only in the formation of a scar, and consequent contractility of this tissue, is based upon a misapprehension of what takes place.

When Fessenden N. Otis, nearly twenty years ago, brought to the attention of the profession the results of his inquiries into the calibre of the urethra and of improved methods of treating stricture, he was subjected to much ridicule. To-day the views of Otis are accepted by genito-urinary surgeons the world over. The urethrometer eliminated the personal equation and rendered the detection and measurement of a stricture a matter of almost mathematical exactness. Until lately the advocates of electrolysis, whether applied for the relief of stricture or fibroid tumors of the uterus, or other pathological conditions, have likewise been derided, ridiculed, or flatly accused of lying. These weapons, first used with effect by writers and teachers of prominence, have now been picked up by a number of youthful imitators, who, by reporting one or two unsuccessful cases and incidentally exhibiting their gross ignorance of the agent they are handling, endeavor to throw discredit upon a procedure which they show that they do not understand.

At a recent discussion of the merits of electrolysis in the treatment of uterine fibroids an English surgeon, who has attained enviable distinction as an ovariologist, declared his unwillingness to try the method because he was "a surgeon," and evidently thought it beneath his dignity to meddle with batteries, needles, and milliampéremètres. His impertinence received a sudden check, however, when the two greatest living abdominal surgeons in the world, Sir Spencer Wells and Thomas Keith, asserted their belief in the efficacy of electrolysis and their intention of giving it preference over the knife in all suitable cases in their practice. The humptiousness of this Englishman is exactly

paralleled by that of an American surgeon of my acquaintance who rejects electrolysis even in cases where its effects are unquestioned, on the same grounds.

The study of the electrolytic decomposition of organic tissues has hardly been begun. No clear conception of the process can be obtained until the principles of electrolysis in inorganic fluids are first thoroughly studied. Careful experimental and clinical research is demanded. In face of honest, thorough work, based upon exact knowledge, criticism of the nature of that which has been aimed at electrolysis during the past two or three years will bear its own condemnation.

The present development of the practical applications of electrolysis in medicine and surgery is so largely due to the intelligent and persistent labors of American dermatologists that I considered this association the body best qualified to judge of the worth of the remarks I have submitted. I trust that I have not deviated too far from the subjects that may properly be brought to your attention.

NEUROLOGY.

Some Problems of Mental Action.

Such is the title given to his annual address (a copy of which has kindly been given us by Dr. Richard Gundry, Medical Superintendent of the Asylum for the Insane, Maryland, and President of the State Medical and Chirurgical Faculty, Referring by quotation to a remark of Sir Walter Scott, the speaker said: "These materials for tragedy or comedy are all around us, though their relation and importance may not be recognized until some magic weaver blends them into an appropriate design." Of the numbers of such in the families which make up a community, some one becomes the trusted adviser, and to the family physician—if he be really one—people instinctively turn. "He is not only called upon to rectify disordered bodily functions, but also, at times, to estimate the influence of these disturbed activities upon the highest nervous processes, in influencing the power of adjustment of the patient to his environments; to calculate the future progression of such disturbances," so that the sources of strength may be carefully cultivated and brought into action. In the study of such a question three factors must be considered: 1, inheritance; 2, en-

vironment; 3, personality. As regards the first: "The fundamental principle is that every attribute of the parent tends to be exhibited in the offspring." But this is not invariably the case, or when it is present, is the same quality inherited equally by every child. "The children of epileptic or insane persons are more likely to inherit the epilepsy or insanity of their parents, as well as their other qualities; but all children of epileptic parents do not have epilepsy, nor all children of insane parents become insane. . . . This transmitted tendency will probably appear in the offspring at an epoch corresponding to its appearance in the parent." Cases were cited where blindness and carcinoma had been transmitted. Porrey tells of a family every member of which became insane at forty. . . . The tendency tends to develop at an earlier age in successive generations, while the tendency derived from one parent only is apt to fall on the sex of that parent. The attributes peculiar to one parent may be displayed by the offspring at one period of life, and those of the other parent at another time."

Granting these observations to be correct, another important question arises: Are acquired peculiarities and injuries transmitted? "It is observed that injuries to nerve matter which are efficient causes of hereditary disease are those which in the first instance were inflicted upon a nerve centre or the trunk of a nerve, and that no injury suffered by the peripheral expanse of nerve matter is capable of being transmitted." Deformities of limbs are not transmitted. When epilepsy is acquired it becomes a permanent possession of the race, and passes to some member of the family in each generation. And so it is with intemperance and other causes of change of nerve tissue.

With regard to the neurotic or insane diathesis, Dr. Gundry remarks that, whether a true diathesis or not, certain it is that all persons inheriting such are marked by a permanent lowering of nervous energy, or that quality of nerve force which is called *tone*. "In all these we are apt to see explosions from slight or inadequate causes, an apparent eagerness to respond to external suggestions, and an inability to resist the approach or progress of morbid causes. These are the people who are never well. . . . A healthy man does not work up to his full income of nervous energy, except upon special occasions of strain," and is saved

then from collapse by falling back upon the reserve force. But the depression of nerve force which is derived from an evil inheritance, or it may be of unrestrained passions, tends to become allied to many and highly diversified forms of mental constitution. "It will be the most persistent and insidious foe he will have to encounter; the most cunning and treacherous, the most palpable and multiform. . . . Without real courage, and with but little endurance, they tell the truth only when an advantage is to be gained by doing so, and make open attacks when sure of success." When allied to the higher development of intellectual power this diathesis produces serious effects, and blurs careers such as those of Byron, Burns, Goldsmith, Shelley, Poe, Rousseau, and others less noted.

The environment must also be considered in weighing those influences. "No man can wholly escape its influence, however much he may apparently differ from its outward product." Thus in the olden time the ablest men believed in witchcraft, as for instance William Hale, Sir Thomas Browne, and Bacon. We are all more or less influenced by processes of thought we have never examined, but accept unquestioned as our inheritance the derived wisdom of our ancestors—an inheritance which gradually changes, but always preserves its relative position. This is often greatly lessened, as by changes of environment. The evidence of the neuropathic diathesis may often be seen in the development of the child in all or only one of the divisions—feeling, thinking, acting. Regarding the evil tendency which in some is ineradicable, Dr. Gundry quoted from Dr. Kerlin, the experienced Superintendent of the Training School for Feeble-minded Youth, at Elwyn, Pa.: "It is a mournful conclusion that has been reached after twenty years' experience, that in every institution of this kind, and probably to a far greater extent in our refuges and charity schools, there exists a small class of children to whom the offices of the school-room should not be applied. These are the so-called moral imbeciles or juvenile insane, who are often precocious in their ability to receive instruction, but whose moral infirmity is radical and incurable. The early detection of the class is not difficult. Their existence can be made happy and useful, and they will be trained into comparative docility and harmlessness, if kept under a uniform

temperate and positive restriction. The school-room fosters the ills we would cure. In teaching them to write we give them an illimitable power of mischief. In educating them at all, except to physical labor, we are adding to their armament of deception and misdemeanor."

After referring to other classes of abnormal mental action, the writer went on to say, it is very certain that we cannot overthrow all the malignant influences by force, nor by any treatment dictated by the rule of thumb. But we must be sure that the patient belongs to this category, and is not one whose acts are merely the thoughtless, exuberant actions of youth. "We must interrogate nature, and under her guidance educate and train these people." Too often we educate the head and leave the souls and bodies out of the question. Our real object is to teach these people to teach themselves. The force which hitherto has worn trails in the nervous systems by repeated travel over them, must be replaced by gradually turning the will power into other channels. Examples of how this inhibitory action may be cultivated were given. Conspicuous amongst these is Darwin's: "Many years ago I laid a small wager with a dozen young men that they would not sneeze if they took snuff, although they all declared that they invariably did so. Accordingly they all took a pinch, but from much wishing to succeed, not one sneezed, though their eyes watered, and all without exception had to pay me the wager."

"The art of life, according to Paley, is that of rightly setting our habits, and it is important that the setting be done while young. In the oversight of youth, much assistance can be given by teachers and advisers, but more by himself. The determination and choice must come from him; in the direction of details he may be assisted by others. But suppose that the setting of the habits, instead of having been rightly done, has been the very opposite, what remedies have we to advise then? How often is our advice asked about those who are becoming or are inebriates, or the slaves of narcotic drugs. Of course, it is easy to prescribe for the immediate effects of these habits, and too often the cure of these is mistaken for the removal or reform of the habit. When the man is made sober by enforced abstinence, or the effects of the narcotics have all passed away, there still remains the *mentis vitia* which is the parent of the evils which the indi-

vidual still seeks dalliance with, with the inevitable recurring evil results. So long as this dalliance continues, so long the evil is incurable. Nor is any external agency able to break this up unless aided by resolute determination within. To this enemy the citadel always yields so long as an effectual friend remains within. Destroy those within and the external foes soon vanish."

BACTERIOLOGY.

Bayard Holmes, M.D., read a paper at a recent meeting of the Chicago Medical Society, entitled: "The Bacillus Pyocyaneus, with a consideration of the importance of clinically recognizing the various forms of suppuration and a suggestion of some new tests for the Chromogenic Bacteria." There are very few surgeons who do not distinguish at least two forms of suppuration, the tubercular and the non-tubercular. Some have added a third form, which seems to be easily recognized when unmixed, the streptococcus of suppuration. This is a form of suppuration which occurs especially in the young after the acute exanthemata, and is prone to assume a subacute course *in loco*, and to be easily excited to metastasis. Another peculiarity of this infection is its power of intercellular infiltration, producing extensive dissections of tissues. In the neck, after scarlet fever, such dissections have extended nearly around the neck and up and down to the origin and attachment of the cervical muscles. When we observe such terrible local destruction we should scarcely think it necessary, before calling attention to this form of infection, to point to the frequent cases in which the streptococcus, doing little damage in the neck, is suddenly carried to the kidneys, where embolism in the glomeruli results with all the sad consequences of post-scarlatinal nephritis. The Streptococcus pyogenes is found in about half of all abscesses in man (?). It appears mixed with other microbes as a rule. One of its biological peculiarities is its dependence upon other forms of infection or severe traumatism to determine a point of least resistance through which invasion takes place. I have a case to report in which it occurred in company with the bacillus of green pus.

Many studies of this microbe have been made by the French school, notably by Charrin. His experiments on animals have been of the greatest

value in determining the pathogenic properties of this bacillus in particular, and of all pyogenic bacteria in general.

Ernst noticed in the blue pus from four cases at Heidelberg a variety of the *B. pyocyaneus* which did not show the characteristic fluorescence which had been noticed by all authors up to that time. He thought the difference was of enough account to entitle the bacillus to a place as a distinct variety; he therefore proposed, after the manner of the botanists, to call it *Bacillus Pyocyaneus*, B, and to designate the iridescent variety as *B. Pyocyaneus*, A.

Ledderhose has investigated anew both varieties, and concludes that whether or not there is sufficient difference between the two forms to separate them into two species, it would be well to apply to the iridescent variety the term *Bacillus Fluorescens*, and to the B of Ernst the old name *Bacillus Pyocyaneus*.

Both because Ledderhose has given the most complete study of the subject, and because his names are descriptive, I believe that they ought to prevail.

Clinically we may say that the color of the pus is not significant. The appearance of the *bacillus pyocyaneus* in a woman does not portend any graver evil than the appearance of any other common pus microbe. It was especially common in the age of the wet dressings, and before the antiseptic times; then it often appeared as an epidemic and followed a particular surgeon even into distant towns. The sweat of patients affected often stains the bedding green. It appears in the dressings of those who have no open wounds, in places where they are kept moist for a long time with the secretions of the skin. Even in antiseptic dressings it appears after the antiseptics are diluted by the secretions of the wound beyond the point at which they restrain bacterial multiplication. It is most frequently noticed in such cases a little way from the edge of the wound, and close to the healthy skin. The glands of the skin furnish the germs a hiding place, and, at the same time, secrete a pabulum, which at the proper time furnishes the most favorable condition for their growth.

Under these circumstances the multiplication of the *B. pyocyaneus* is attended by the production of a most characteristic odor. After becoming familiar with it it is more striking and significant

than the color. Indeed, it has frequently aroused the suspicion of green pus where no color was to be observed until the dressings had been exposed to the oxydizing influence of the air for some time. Urichs found the bacillus in dressings having the odor of green pus, but in which the green color could not be recognized at all. This leads to the conclusion that the pyocyanin is a secondary product resulting from the oxydation of the primary product of bacterial growth. Zaufal and Gruber have noticed the appearance of green pus in *Otitis externa diffusa*. In one of Gruber's cases the *bacillus pyocyanus* was demonstrated in the secretions and alone in a small abscess of the lobe.

The Sterilization of Milk at the Time of Milking.

Randnitz, before the Central Organization of German Physicians in Bohemia, on July 15, stated that milk obtained from a cow three weeks before, and kept at the ordinary temperature of a room, remained as alkaline as immediately after milking, and was not to be distinguished by taste, odor, or appearance from freshly drawn milk. This cir-

cumstance, as well as the fact that repeated boiling, to which a sample was subjected, produced no change, bespeaks entire freedom from germs, without any bacteriological examination. The steam apparatus in the stalls for boiling the feed is also used to sterilize the glass receptacles furnished with air-tight rubber stoppers, so that there is no extra cost. A covered wooden tub with shelves of perforated tin plate receives the bottles. By means of a pipe steam is passed into the tube from below. Prior to milking, the udder of the cow, the milk-pail, and the hands of the milker are carefully cleansed. The milk is strained through clean linen directly from the pail into the sterilized bottles. Should a steam apparatus not be accessible, the bottles can be sterilized in a large, covered vessel. Upon the recommendation of the speaker, sterilized milk is so prepared and sold at Hostiwitz, near Prague, during this autumn. Since introducing among his patients milk thus sterilized, he has seen no cases of diarrhœa. Constipation is the rule upon weaning; in which case a small quantity of carbonate magnesium or phosphate of sodium may be added.

ANNUAL REPORTS OF LOCAL BOARDS OF HEALTH

Says Chas. McLennan, M.D., Medical Health Officer, Trenton, in his Annual Report:—

"Our water supply is a matter of grave concern. The supply to the lower portions of the town, derived from springs on the first terrace, hitherto quite pure, will soon be contaminated by sewage, as houses with common privy-pits are now built on two sides of it and the porous soil on the elevated portion supplied by wells, renders them dangerous." Dr. McLennan recommends that the Council and Board of Health at once investigate in a comprehensive way these two important questions of water works and a sewerage system.

At the time of licensing milk vendors a thorough inspection of the cattle and premises, as well as an enquiry into their feeding and care, was made by Mr. Preston, the veterinary surgeon. The butchers' shops were examined and registered. The total mortality during the year in Trenton was 12.2 per 1,000."

Dr. Hanover, Medical Health Officer for McKillop Township, states that during the months

of July and August an epidemic of dysentery prevailed, affecting young and old alike, and was the immediate cause of several deaths. [We would like to hear from the doctor *re* its supposed cause, and whether the water supply was examined.]

Dr. A. Robillard, Medical Health Officer for Ottawa, in his annual report, says, after speaking of the typhoid epidemic of 1887: "Another cause of this increased mortality has been the prevalence of diphtheria throughout the year. The disease in the large majority of cases originates from the evil effects of bad drainage and plumbing, though its chief mode of propagation is by personal infection, against which proper isolation is the only reliable means of safety."

Dr. Robillard further says: "Regarding the prosecutions instituted to enforce law in, such cases should convince the public of the sincerity of our purposes, whilst the results obtained should inspire confidence in the measures advocated. For I may safely say that it is due to the constant vigilance and prompt action of this department as regards

such cases, that this city during the past six months was not overrun by an outbreak of diphtheria twentyfold more terrible in its fatality than the outbreak last fall."

Regarding the water supply, the doctor further says: "The purity of our water, which up to last fall had never been questioned, then became doubtful for the reasons above given in connection with the causation of the disease then prevailing. Another reason throwing some doubt on the purity of our water and tending also to connect it with the cause of last fall's epidemic, was the characteristics of the fever as related to its fatality; the death-rate having scarcely reached three per cent. of the total number of cases. This, it is contended, points to contamination of our water with vegetable, rather than with animal organic matter, a fact which seems also pretty clearly demonstrated by the different analyses to which it was subjected. It is evident at all events, that so far as it relates to the causation of specific diseases, the quality of the pollution is the essential knowledge sought and not the quantity; that the chemical analysis of water will not determine the presence or absence therein of specific germs, whilst the different conclusions reached by analytical experts in the analysis of the same water are calculated to throw much doubt on the reliability of such processes or methods to determine the wholesomeness or unwholesomeness of water. Then another circumstance, which, even to the casual observer, is not calculated to impress one with the belief that our water is above suspicion, is the surroundings of the inlet of our water supply. However, this important question is still being investigated, and no doubt that when convinced of their necessity and satisfied as to the best means to be adopted, nothing will be left undone to effect the needed ameliorations to secure purity in this necessary of life."

Wm. F. Cole, M.D., Medical Health Officer for Grey Township makes the following practical suggestions in his annual report:—

"Regarding the school-houses, they are roomy, convenient, well ventilated, and plentifully supplied with drinking water. Teachers have definite instructions posted up (printed ones) furnished by

the Board to each school, stating when any cases of skin diseases, measles, diphtheria, small-pox, etc., appear, to at once notify the trustees, who will at once call in the medical health officer to attend to them."

There are several points worth noting in our retrospect.

1. The laity need educating. They need to learn that measles and mumps often leave constitutional trouble, and not seldom cause death directly; that they affect children more seriously than adults, and that their having the disease once is *not* a more certain prevention to a second attack than is a primary vaccination to a subsequent attack of small-pox.

2. Copies of "Schedule A" should be distributed to every ratepayer in the Province; the distribution being repeated at stated intervals.

3. Central office send to Local Boards a full supply of blanks of all kinds from "Schedule A," especially those for physicians, with positive and direct instructions as to their proper distribution, etc. Charge the municipality for them.

4. Then see that the blanks are used.

5. Constitute the central office an advisory board in more than name. When they formulate a law they ought to be its best interpreters.

6. Have the Monthly Health Bulletin made a *monthly* health bulletin and an *intelligible* means of communication between the people and their health officers.

7. We learn that if the reports of medical health officers are to be of any statistical consequence some means must be devised of having these cases reported to him.

8. That it is obviously unfair to expect a physician to furnish stationery and postage, as well as his time in this matter gratis to a community, to the funds of which he is already a contributor because of his being a member of that community.

To remedy to a certain extent the foregoing it might be suggested at headquarters, that tracts detailing the history of epidemics, written in common language, should be scattered among the people all through this Province."

[We shall from time to time continue selections from such reports as are most valuable.—ED.]

REPORTS OF SOCIETIES.

Toronto Medical Society.

The meeting of November 9th was devoted to the relation of cases in practice, in which Drs. Burns, Wilson, Spencer, Machell, McPhedran, McKenzie and Atherton took part. Dr. Foxton was elected to membership.

STATED MEETING, Nov. 13th, 1888.

President in the chair.

Dr. McMartin was elected to membership.

Dr. Reeve related a case of patient complaining of severe tinnitus. The patient thought he had an insect in his ear; sent for family physician, who blew in vapor of chloroform, then instilled warm oil, and afterwards used a syringe. Dr. Reeve examined the patient, and found a cockroach, which he removed in pieces; the tentacles were embedded in the membrane. In such cases the best plan is to kill the insect with as little injury to the ear as possible, and afterwards remove it.

Dr. Doolittle reported a case of fracture of anatomical neck of humerus in an old lady sixty-seven years of age. The fracture had the appearance at first of a dislocation, but a fracture was found three-fourths of an inch from the end of the bone.

Dr. Davidson reported a case where he had removed a pessary from a woman, which had been *in situ* for ten years. Excrescences had grown up, and embedded the pessary.

Dr. Miller then read a paper on "Infantile Diarrhoea," which occurs during the summer, and is caused by micro-organisms and ptomaines, as germs increase rapidly only when temperature is above 60° Fahrenheit. Children artificially fed are made subject to the disease, as their food contains germs. The difference in composition between mother's and cow's milk will not account for the milk not agreeing with the artificially fed children. Prophylaxis—Indication is to render food sterile. This is best accomplished by boiling half an hour. Feeding bottles must be thoroughly clean, have no rubber tubing; the atmosphere must be pure, and infant's person kept perfectly clean. Treatment—Calomel and ol. ricini. When stomach is very irritable, mustard blister to epigastrium; ice to suck; linseed meal poultices to abdomen; only barley water in small quantities. Antiseptics inter-

nally—Preparations of mercury, sodii salicyl., naphthalin, creosote, salol. Baruch recommends washing out the rectum and colon with warm, sterilized water. Cold baths are recommended when temperature is above 103° in rectum. Diet for first twenty-four or thirty-six hours—Barley water; then sterilized peptonized meat broths; and still later, when necessary, peptonized milk; stimulants must be given when indicated, and in sufficient quantities to overcome exhaustion.

Dr. Oldright asked for the experience of members with Jersey milk. He had exceptionally good results at first, then a change came, and the results varied. He used the morphia and atropia treatment, as the dose could be made so small that the child could not vomit it.

Dr. Wilson thought the only advantage in Jersey milk was that it contained more fat, and less casein, than ordinary milk.

Dr. Carveth mentioned having had good success with egg albumen and one cow's milk.

Dr. Acheson remarked that the casein of cow's milk curdles with a much firmer curd than that of mother's milk; water will not dissolve it; barley or lime water are sufficient.

Dr. Spencer gave $\frac{1}{2}$ gr. ipecac. and rhubarb to a child one year old.

Dr. Wilson had used santonin and morphia.

Dr. Atherton had successfully used suppositories of opium instead of enemata.

STATED MEETING, Nov. 20th, 1888.

President in the chair.

Dr. Dobie was elected to membership.

Dr. Graham related the following case of ataxic paraplegia. E. T., aged twenty-six, married, after birth of first child was troubled with headache from time to time at short intervals. Two months before second confinement it almost completely disappeared. Four months ago she noticed a pain in her back and limbs after exertion, gradually lost power in limbs of left side, pain in pelvis shooting down thighs, patellar tendon reflex increased, cannot stand steady or carry forefinger of left hand to nose with eyes closed, spastic gait, marked ankle clonus, numbness in upper extremity, double sight, left pupil does not respond to light as promptly as

the right, ophthalmoscope shows atrophy of optic disc on left side and commencing atrophy on right. Treatment, direct galvanism.

Drs. Oldright, Wilson, Powell and others reported cases in practice.

Dr. N. A. Powell presented a specimen of sero-fibrinous fluid removed by aspiration from the left pleural cavity of a lady 30 years old. The entire axillary and infra-axillary region was flat upon percussion while marked dulness extended up to the third rib in front. The upper limit of this dulness was a level line. After the removal of six ounces of fluid the curved line of dulness regarding which Peter, of Paris, Garland, of Boston, McPhedran, of Toronto, and other physicians have written, became well marked. As usual, this rose highest toward the axilla, reaching there a point three inches higher than it did near the spine. Only a small quantity of fluid was removed, the object being to reduce the intra-thoracic pressure and promote absorption. In the practice of one large hospital, not situated in Toronto, in nearly every case when aspiration was resorted to in the treatment of sub-acute pleurisy with effusion, empyema subsequently developed. After a time the plan of purchasing a new needle for each operation was adopted, and the series of cases of empyema came suddenly to an end. The speaker had not himself seen empyema follow thoracentesis. He was in the habit of sterilizing his aspirator needles by scrubbing them in hot water with green soap, boiling them in a *closely-covered* vessel after each use and also before they were used again, and finally just as aspiration was about to be done, the needle selected was dipped into alcohol and flashed in the flame of a spirit-lamp. So treated they were reliably aseptic, inside as well as outside, would stand any gelatine culture test, and could be depended upon not to convey germs into or cause purulent decomposition in fluids contained within any of the serous cavities of the body.

Gastric Ulcer with Perforation.—Dr. Alex. Davidson presented stomach showing ulceration and perforation, with following remarks: Mr. N., aged forty, mariner; had often suffered from severe attacks of pain in the region of stomach, which had induced a worn expression of the face. He was a spare, ill-nourished man, and a great lover of acid articles of diet, to wit, cider, pickles, and the like. On June 30th, he was taken with sudden and sev-

ere pain in the epigastric region, the abdominal muscles were intensely rigid, being of board-like hardness. Subsequently the abdominal muscles became relaxed; pain greatly abated. Abdomen now became distended somewhat, and coils of inflated intestine could be mapped out on its surface. Liver dulness could be obtained, but high up and diminished. Patient vomited, also passed, per rectum, large quantities of greenish-colored fluid. In the vomit were found pieces of broken cherry stones and undigested potato. Death took place July 5th. Autopsy showed distention due solely to distended intestines. Perforation of stomach found at its upper and anterior surface, near pylorus. The stomach at seat of perforation was united to the structures above by inflammatory lymph, evidently an effort of nature to heal the rent in the stomach. On endeavoring to break down these bands of lymph, the finger passed into the perforation. After tying both ends of the stomach and removing it, several broken and whole cherry-stones, together with some grape seeds, were found in the back of the abdominal cavity, as it were behind the stomach.

Dr. W. H. B. Aikins presented specimens showing extensive cancerous growth of the œsophagus, with secondary encephaloid deposit involving a portion of the edge of the right lobe of the liver. The notes of the case were furnished him by Dr. McDonagh. J. K., aged 53, by occupation a carpenter. In the family history there was no constitutional trouble. He first noticed a difficulty in swallowing about six months before entering the hospital. During the next four months this difficulty became gradually more and more marked, until he was then able to swallow solids only in the smallest possible quantities. The point of obstruction seemed to him to be just at or below the larynx. He complained of a good deal of cough, and excess of bronchial mucus, but no pain. He also had become considerably emaciated, but attributed this largely to not having had sufficient nourishment. The symptoms became more aggravated during the next two months, when hoarseness set in, and the cough was increased. He entered the hospital about August 1st, 1888. An examination with the laryngoscope proved complete paralysis of the left vocal cord, which was in the cadaveric position. This was thought to be due to pressure on the left recurrent laryngeal nerve. A bulbous

oesophageal bougie (Size No. 7) was passed, and detected an obstruction just below the cricoid cartilage of about one-half inch in extent, and another larger obstruction about five or six inches farther down. Dysphagia was less for a few days after this, but gradually returned. The bougie was again passed about three weeks later, and on its withdrawal about a wine-glassful of bloody purulent matter was regurgitated. This same result followed the third introduction of the bougie. Auscultation over the back proved nothing definite beyond a gurgling sound during the act of swallowing fluids, and also some crepitation. Emaciation was not so extreme, and he was able to swallow fluids and semi-fluids to the end. There was no treatment other than tonics. He died rather suddenly, about two months after entering the hospital, and about eight months after the first symptoms were observed.

R. CUTHBERTSON, M.D., *Sec.*

The Milwaukee Meeting of the American Public Health Association.

The 15th annual meeting of this Association took place on the 20th of November, in Milwaukee, and was, as its several predecessors have been, an undoubted success. Though not characterized by the lavish attention bestowed upon the Association during its visit to Toronto in 1886, yet there was done a large amount of practical work, under the presidency of Dr. C. N. Hewitt, M.D., Secretary of the State Board of Minnesota. Amongst the Canadian delegates present were, Dr. F. Montizambert, of the St. Lawrence Quarantine; E. F. Lachapelle, M.D., Chairman Quebec Provincial Board of Health; Dr. W. Canniff, Medical Health Officer of Toronto, and P. H. Bryce, M.D., Secretary of the Ontario Provincial Board of Health.

The work of the first session began with the report presented by Chas. Smart, M.D., Surgeon U. S. Army, on "Pollution of the Water Supply." The conclusions of the committee indicated the necessity for increased care in the protection of drinking water from polluting causes, and for a wider study of the methods for determining those pollutions which are of a deleterious character. In the discussion which followed, Prof. Vaughan, of Ann Arbor, spoke at some length on the advances in water analysis due to biological methods; but pointed out how the determination

of the number of microbes in a given water without a study and determination of their pathogenic or non-pathogenic characters must be unsatisfactory. He illustrated the point by reference to his experiments on bacteriological water analysis. The report, on motion, was ordered to be printed at once for distribution to State Boards.

The evening session was of a popular character, and after an address of welcome to the city by the Hon. Mr. Johnston, the President read a powerful and exhaustive address on the work of the Association, addressing himself especially to the work of executive officers, whether municipal, state, or federal. The regular work of the Association was resumed on Wednesday, when Dr. J. Rauch, Secretary State Board of Illinois, read a paper on "Useless Defences against Yellow Fever." Thereupon several southern members took up the discussion. The prevailing idea of Dr. Rauch's paper was to the effect that should the season be somewhat advanced and temperature moderately low, a line is soon reached, as travel from the southern states takes place, which technically may be called the danger-line, north of which infected persons, though sickening themselves, are not likely to pass to communicate the disease to others. While this line cannot be called a constant, yet with ordinary safe-guards in the matters of isolation and sanitation, there is really no cause for such panics as from time to time occurred during the past summer even so far north as southern Illinois. Others claimed that the panic, by causing people to flee, was a means of eradicating the disease. Other speakers at a subsequent session presented papers and engaged in the discussion, which with the importance of the subject and the temperament of southern members, became at times most animated. Dr. Cochrane, of Alabama, who had practical experience with the disease during the past summer, presented a most admirable summary of the history and known facts of the disease, and adopted the position of Dr. Rauch, viz., the necessity for the spread of an accurate knowledge of the disease and the means of its prevention, thereby putting away both the cause and the necessity for panic by the adoption of scientific measures for its suppression. Regarding the nature of the disease itself, he said: "This disease is caused by a transportable and transmissible poison quite as specific as prussic acid, for

instance; but it is not known whether the same be a living organism, similar to the cholera microbe, or, as seems more probable, the product of some quasi fermentative process like that caused by the yeast fungus, which in feeding on sugar decomposes into alcohol, carbonic acid, and water. These germs do not appear to be bacteria of generically distinctive character or kind, the probabilities pointing rather to a pathologically productive condition of the flora ordinarily resident in the alimentary canal. It is infectious, and moreover communicable, but whether from the patient's respiration, secretions, or excrements is unknown, as is also its route of ingress into the human organism whether from the skin, by inspiration or alimentation. Though this point is also not yet quite certainly determined, it is more than probable that not personal contact, but the immediate environments, as is the case of typhus and cholera, produces the infection. It is in the United States, however, always of exotic origin; and, as in the case of a shower of sparks on a shingle roof, it is but one, perhaps, that will set fire to the building. Yet one or two sporadic cases are very unlikely, if properly handled, to produce an epidemic, even under otherwise unfavorable conditions. For it may be laid down, as a general proposition, that, in order to get across the street, or over a wall, this infectious 'what-is-it' must be lugged there, as it were, by hand or in a bundle. Thus jails, convents, and secluded private domiciles are demonstrated to be their own best quarantines."

Dr. A. W. Bell, of New York, followed, while Col. Hadden, Mayor of Memphis and an old sanitarian of the Mississippi, in a speech practical pointed and humorous, told what a yellow-fever panic meant in the South, and how they had to cope with this, the greater evil of the two.

Dr. H. F. Hoyt, of St. Paul, read a paper on the sanitary progress of his city and was followed by W. W. Payne, of U. S. Signal Service, who urged co-operation between health officers and this service, to the end that by the graphic compilation of "weather" and "health" data, their causative relationships may be established.

During the afternoon many of the members went to examine the "Destructor" furnaces, the old "Forrester," and the new "Engle." These interesting matters will be referred to again.

The evening session was a largely attended and

most interesting one. D. E. Salmon, D.V.M., Chief of the Bureau of Animal Industry, Washington, read a paper on "Tuberculosis, its Origin, Detection, and Control." He pointed out in a few words the overwhelming importance of the subject of consumption, inasmuch as 131,000 is computed as the number of persons who will have died of this disease in the United States during the current year. While technically precise and scientifically accurate throughout, the doctor's paper yet treated the subject in a popularly instructive manner. The bacillus was shown to enter the human organism, not by direct transference from one person to another, but on the one hand through the air and water we all consume, surcharged as they are with the dust of human and animal secretions; and on the other, by much of the beef and milk that despite its infected condition find a ready market. Little hope was held out for the attainment of even a measurable control of the disease except by stamping it out in cattle.

The stereopticon illustrations of the microbes of the disease were most admirable and greatly instructive to the popular audience present.

This paper was followed by one on "Some Observations on the Origin and Sources of Disease Germs," by Theobald Smith, M.D., of the Bacteriological Laboratory of the Bureau of Animal Industry, Washington, D.C.

Mr. Daniel Doty, of the town of Pullman, gave a full and extremely instructive and interesting talk on the growth of the town of Pullman and its sanitary perfections. Undoubtedly the sewers and methods of the disposal of sewage are an enormous stride in advance in public health work.

The award of the Lomb prize essay on Practical Dietetics and Cooking, was thereafter announced, the successful essayist being May J. Hinman, wife of Dr. J. J. Abel, of Strasburg, Germany, where both the doctor and wife are attending the university. Of the remaining sixty-nine essays not one was deemed worthy of the second prize.

The subsequent sessions were mostly for routine work, the reception of reports and the election of officers.

The following is the list of officers:—

Advisory Council.—J. C. Dozier, Birmingham, Ala.; H. C. Donnavant, Osceola, Ark.; T. H. Orme, Los Angeles, Cal.; Chas. Ambrook, Boulder, Colo.; R. S. Goodwin, Thomaston, Conn.; O. W. Archibald, Jamestown, Dak.; L. P. Bush, Washington, Del.; Hon. Harrison Reed,

Jacksonville, Fla.; L. A. Falligant, Savannah, Ga.; R. S. Starkweather, Chicago, Ill.; John M. Taylor, Crawford, Ind.; A. W. Cantwell, Davenport, Ia.; D. C. Jones, Topelka, Kan.; Wm. Bailey, Louisville, Ky.; L. F. Salomon, New Orleans, La.; F. H. Gerrish, Augusta, Me.; John Morris, Baltimore, Md.; A. R. Rice, Springfield, Mass.; V. C. Vaughan, Detroit, Mich.; D. W. Hand, St. Paul, Minn.; Wirt Johnson, Jackson, Miss.; Geo. Thomas, St. Louis, Mo.; George Cook, Concord, N. H.; Ezra M. Hunt, Trenton, N. J.; John Griffin, Brooklyn, N. Y.; C. O. Probst, Columbus, O.; Crosby Gray, Pittsburg, Pa.; Geo. E. Waring, Newport, R. I.; Thos. B. Horlbeck, Charleston, S. C.; Hon. D. P. Hadden, Memphis, Tenn.; R. Rutherford, I, Houston, Tex.; A. T. Grinnell, Burlington, Vt.; J. F. Cabell, Richmond, Va.; C. F. Richardson, Charleston, W. Va.; Solon Marks, Milwaukee, Wis.; D. E. Salmon, Washington, D. C.; Chas. Smart, Washington, U.S.A.; A. L. Gihon, Brooklyn, U.S.N.; John Godfrey, Chicago, U.S.M.H.S.; Chas. W. Covernton, Toronto, Can.; P. H. Bryce, Toronto, Ont.; H. R. Gray, Montreal, Que.; W. R. D. Sutherland, Winnipeg, Man.; W. S. Harding, St. John, N. B.

Upon recommendation of the Council the following officers were elected:—H. A. Johnson, Chicago, President; Jerome Cochrane, of Alabama, First Vice-President; Fred. Montizambert, of Quebec, Second Vice-President; Secretary, I. A. Watson, of Concord, N. H.; and Treasurer, J. B. Lindsley, of Nashville, Tenn.

At the concluding session the following papers were read by title:—"Hygiene of the Eye and Ear," by John Felton, of St. Paul; "Difficulties and Successes of the Public Health Service in Large Cities," by O. C. DeWolf, of Chicago; and "Organization of a National Health Service," by S. W. Latta, of Trenton, N. J.

Just prior to adjournment and immediately after Dr. Hewitt had himself introduced his official successor in a most felicitous manner, ex-Gov. Harrison M. Reed, of Florida, was accorded the floor to refute, as of his own knowledge, the incorrectness of all criticism which had lumped Jacksonville and its efficient health department with the flagrant state of affairs that had obtained in other portions of the State. Incidentally the Governor was at pains to commend the suggestion made by Dr. Hewitt in his annual address as to the scope of authority and territory to be accorded by Congress to the national health officer.

Upon motion of Prof. Perkins, a resolution of thanks was passed in recognition of the courteous attention and hospitality extended to the Association by the Woman's Club, and this resolution was ordered to be suitably engrossed for presentation.

Upon recommendation of the Council, Brooklyn was fixed upon as the place for the next annual meeting, and a successful meeting is assured—Dr. Raymond, of *The Brooklyn Medical Journal*, being secretary of the local committee.

The social entertainment consisted of a drive to the flushing conduit station and to the city water works, and of a reception by the ladies and gentlemen of the city. The Milwaukee meeting was a very successful one, and plenty of good work done; although to many of those from the north it seemed as if undue prominence was given to the study and discussion of Yellow Jack.

The meeting finally adjourned Friday at noon.

PUBLIC HEALTH

MUNICIPAL HYGIENE.

Toronto Sewerage and Water Supply.

The complex questions of sewerage and increased water supply for the city of Toronto are now being considered by two eminent engineers, Messrs. Rudolph Hering and Samuel M. Gray, who have been retained for that purpose by the City Council. Both the gentlemen are well-known in the United States, and are recognized as civil and sanitary engineers of the highest ability. Mr. Hering's report of his examination of sewerage works in European cities, made in compliance with the request of the National Board of Health (supplement No. 16, National Board of Health Bulletin)

deals exhaustively with the whole question of sewerage works and sewage disposal. Mr. Gray's report upon a scheme of sewerage for the city of Providence, R. I., (for which city he is engineer), is a masterpiece of sanitary engineering. The citizens may rest assured that the problems above mentioned will be solved in the best possible manner by these gentlemen, whose report, we understand, will be presented about the end of December.

Complete details of all previous enquiries, surveys, reports, etc., have been laid before them. They have been furnished with information as to rainfall, velocity and direction of wind; and to ascertain as much as possible about the currents in

the lake, numerous float experiments have been made. They are in possession of all reports, maps, etc., relative to the formation of the Island and harbor (as having a certain bearing upon the question), and have had lines of soundings taken at various points in the lake. They have minutely examined the coast from Scarboro' to Mimico, the Don and Humber rivers, the harbor, Ashbridge's Bay, and the marsh, as well as the hills at Scarboro', the Rose Hill and high level reservoirs, the proposed site for a new reservoir, and the proposed pipe lines. They have also visited the pumping stations and have examined the principal sewers. Maps showing sewers, water pipes, drainage areas, contour lines, water pressures, pumping districts, and other information, have been furnished them. They have visited and examined Bond, Willcox, and St. George's lakes, and the country to the east of Yonge Street as far as Markham village. They have also visited Lake Simcoe and examined Cook's Bay and the south shore of the lake. The survey of the Ridge lakes, and the country southward (made in '87) has been extended northward to Lake Simcoe and two lines of levels have been taken, one crossing the country near Queensville to the south shore, and the other running along the west shore of Cook's Bay to Big Cedar Point. It is to be hoped that the vexed question of obtaining a water supply by gravitation, either from the Ridge lakes, the head waters of the Don, Humber, and Rouge rivers or from Lake Simcoe, will be settled by their report for all time.

They are in possession of Dr. Ellis' analyses of the waters of the above lakes and of Lake Ontario.

Information as to the population and growth of the city and outlying districts has been given them, and their report will be applicable not only to the Toronto of to-day but to the Toronto of the future. The effect of storms in discoloring the water at the present intake, and other proposed intakes, as well as their susceptibility to contamination by sewage, etc., will be fully discussed. Charts showing the quantity of sewage flowing through some of the principal sewers, and sections giving the depth and sizes of the intercepted sewers have been prepared and sent to them. Doubtless their report will definitely settle the route for the main sewers as well as other sewers embraced in the system and will give estimates of the cost of all proposed work, etc., etc. It is a wise course to consider these

subjects—sewerage and water supply—conjointly, and, in conclusion, we can sincerely say that we hope that the Council will proceed to act upon the recommendations of these engineers without delay.

Says the Paris correspondent of the *British Medical*: The examination of the flesh of animals, from which the viscera have been removed, necessitates the analysis of all the tissues, the inspection of the fat, muscular tissue, fascia, pleura and peritoneum, spinal cord, glands, vessels, blood, etc., before the meat can be accepted. In the normal state the flesh of every animal has its own characteristic odor. Beef has a special insipid kind of smell, modified by the ways in which the animal has been fed. Thus it is stated that the flesh and the milk of cattle in the polar regions have a fishy odor, because the absence of pasturage obliges the inhabitants to feed their oxen and cows on fish. Veal smells of milk, mutton of wool and sometimes grease. The normal odor of pork is insipid and inoffensive, but when the pigs are fed on offal the flesh has a pale cachectic hue, and an offensive smell and taste. The odor of poultry fed on corn differs from that of poultry artificially fattened. In a diseased state meat emits a typical odor, resembling the breath of a feverish patient. This odor is particularly noticeable beneath the shoulder, and in the muscles of the under side of the leg. When diseased meat is roasted it emits a strong and offensive smell. This fever odor is particularly decided in the case of animals which have suffered from peritonitis, cholera, morbid symptoms following parturition, or with ordinary acute disease. In such cases the smell is recognizable at once, and it is unnecessary to make any incision. Feverish meat is always unfit for consumption on account of the leucomaines which it may contain. Moreover there always exist pathological lesions which denote that the animal was diseased before being killed.

Dr. J. B. Russell, of Glasgow, has through his inspectors obtained evidence to the effect that scarlatina has been again disseminated by means of milk, in the west end, though he has not been able to form an opinion as to the point at which infection gained entrance to the milk. The Board of Health has instructed inspectors to take steps to enforce a rule forbidding persons selling milk by retail, storing or keeping it in a shop communicating with a sleeping room.

The proprietors of a house in Glasgow were fined £100 damages to one of their tenants, on account of the death of his only child from diphtheria, caused by bad drainage. The proprietors had been directed several times previously to put unsanitary drains on the premises in order, but had done nothing till the disease occurred.

GENERAL HYGIENE.

Miss Lydia Becker, who wrote in the *Sanitary Record* of October in favor of the wearing of corsets, is not to have the courtesy extended to her, so often accorded to women, of having her argument pass unnoticed. Dr. W. W. Smith, M.D., in the *Record* of Nov. 15th, says he believes Miss Becker is struggling against inevitable facts. He states that many years ago he adopted a plan in case-taking in his private consultation room of dividing the personal health report into two principal columns, headed *reported* and *observed*. The conviction grew with experience that the best results were obtainable by depending most upon facts *observed*. New light upon such states as *want of tone* or *neurasthenia* was gradually shed upon the result of *observed* facts. The results of many hundreds of cases year after year grew into a kind of anatomy and pathology of corset-wearing. After referring to the evidences of the effects of compression upon the circulation as readily noticed on any person wearing stays, the influences upon muscles and organs is pointed out. The *oblique recti* and other muscles supporting the back, those supporting the abdomen, the diaphragm, of lungs, liver,

stomach, a part of the great sympathetic nervous system, and the great main blood vessels are influenced by this pressure. General atrophy of the muscles takes place, until they become a seeming necessity, or as Miss Becker says, the corset "tends to cause an upright carriage." Says Dr. Smith further, "The young wearer is uneasy without their artificial support; she cannot comfortably sit upright, she does not believe it good to be without her stays, she feels 'dropping together' if she attempts their omission." Dr. Smith says Miss Becker's argument regarding said ladies "is too much like that of Aesop's fox who had lost his tail."

For invalids who are seeking a sanatorium, one of the most recently noticed is that of San Paulo, in Brazil. Thirteen hours distant by rail from Rio Janeiro, it is only three hours from the port of Santos. It is 28 hours by mail steamer from New York. San Paulo is rapidly developing as a centre, and has 50,000 inhabitants of Brazilians, Portuguese, Italians, English, etc. In its immediate vicinity are charming country walks and scrambles amongst an almost tropical vegetation. The climate both in winter and summer is delightful, and is specially recommended in Dr. Walshe's work for pulmonary invalids. The atmosphere is dry and exhilarating, with but very slight barometer changes. The average maximum temperature of the hottest month, January, is 80° in the shade; in the coldest, July, 72°. Unlike the Riviera, San Paulo has no unhealthy season; and those who like sea-bathing can go to Santos, near by.

GENERAL NOTES

THERE were 130 deaths in October last in Calcutta from Asiatic cholera.

THE aggregate receipts of the local authorities for 1885-6 in England and Wales amounted to £44,331,540, of which £696,492 was spent on matters directly sanitary, e.g., cemeteries, sewage farms, etc.

THE next meeting of the American Medical Association will be held at Newport, R.I., on Tuesday, June 25th, 1889. Dr. W. T. Parker is local secretary, and Dr. H. R. Storer chairman of Committee of Arrangements. The occasion will be the 40th

annual meeting and the 250th anniversary of the settlement of Newport.

FROM the 14th annual returns under the Vaccination Act, it appears that of 894,263 births registered in England and Wales, the number which, at the time the return was made, had been successfully vaccinated was 757,714 (84.7% of the whole). The number registered as dying before they could have been vaccinated being 83,684, or 9.4% of the whole.

THE Pasteur Institute, recently erected for his use and on account of his distinguished services

to science, will be a central source of strength to the scientific work of the investigation of disease. The opening was an ovation to the world-renowned *savant*, who has successfully elucidated the microbes of anthrax, chicken-cholera, and hydrophobia.

A NEW institute for the practical study of sanitary science has been organized at Rome. Original research in sanitary subjects will receive governmental aid through the Italian National Board of Health. Diplomas will be granted to those who complete a successful course of study. Dr. Pagliani, of the University of Turin, will occupy the chair of sanitary engineering.

A REPORT of the Central Board of Health of Melbourne has been made, describing an outbreak of diphtheria, the cases occurring almost simultaneously, in the neighborhood of Daylesford. The local health officer in his report points out the strong *prima facie* evidence that the children contracted the disease from cats, numbers of which are dying in the neighborhood.

THE medical public generally will regret the sudden death of Henry B. Sands, M.D., of New York, on 18th of Nov. He died in his carriage while returning from a professional visit. For two or three years his health has been somewhat impaired, but he has continued steadily in practice. Death proved to be due to heart failure. For many years Dr. Sands has been recognized as the leading surgeon of New York.

FIVE cases of poisoning from eating salt pork, all bought at one shop, are reported by Dr. Madjekin, of Tambov, Russia. In a couple of hours after eating, extreme prostration, giddiness, vomiting, difficulty in breathing, occurred. The pork was found to be odorless, of a grayish color, and an intense burning taste. Several other cases were subsequently reported by Dr. Pakrovsky, of the same place, where the symptoms were similar.

THE French Minister of Agriculture, pursuing the question of prophylaxis against animal diseases, is about to undertake a series of prophylactic measures against charbon, rouget, tuberculosis, etc. The measures hitherto applied to charbon are to be extended to tuberculosis, viz., surveillance, isolation, destruction of the flesh of tuberculous animals.

The milk from tuberculous cows is allowed to be utilized for feeding only after it has been boiled.

DR. RUATA, of the University of Perugia, in a recent pamphlet, entitled, "Protect Yourselves," points to the amount of illness indicated by the fact that some 30,000 deaths occur annually in Italy from typhoid fever alone. He despairs of emulating during the present generation, at least, the sanitary arrangements found in England, and would be content if the present generation of Italians could be aroused to a sense of ordinary decency and cleanliness.

SAYS Laebish of Innsbruck, "Antipyrine belongs, according to Demme, to the great class of protoplasmic poisons. Direct injection into the muscular substance is followed by rapid inexcitability. This explains the cardiac paralysis rapidly succeeding large doses of antipyrine. Demme recommends in cases with the evidences of poisoning present, subcutaneous doses of caffeine for the purpose of raising the excitability of the cardiac muscle and of the nerve centres."

THE 7th edition of Dr. H. C. Wood's "Therapeutics: Its Principles and Practice," gives increased prominence to remedial agencies other than administration of drugs. Notably is this the case with the discussion of the effects of water in its therapeutic uses. Predigested aliments are fully discussed and judicious directions for their use given. There is a lack, however, of chapters on the influence of altitude, humidity, etc., in the treatment of disease.

IN a recent report to the French Department of Agriculture, the Inspector-General gave an account of experiments in treating black-rot, that parasitic disease known to all our readers, which has caused the loss of so many thousand dollars to fruit growers on this continent, and which has appeared in limited districts in Herault and the valley of the Garonne. The experiments have shown that treatment with a cupric solution can arrest the invasion of the black-rot, as that of mildew, if applied at the proper time and in a right manner.

AN interesting occurrence is reported in the *Revue Générale D'Ophthalmologie*. An oak forest in the environs of Worms was invaded by insects of the bombyx (*Crethocampa*). They were destroyed by burning, by means of lights attached to the end

of long poles. The workmen engaged in this work were injured by the introduction into their eyes of some scales from these insects. There resulted from it an intense conjunctivitis, with blepharospasm, photophobia and excessive secretion of tears. After having removed the foreign bodies, treatment led to recovery, but the inflammation did not succumb in one case till after 26 days.

C. I. KINGSETT, F.C.S., recently read a paper before the London Chemical Society: "The Comparative Antiseptic Values of Various Chemical Substances." He stated that the processes of chemical change set up by micro-organisms are two—viz., hydration and oxidation. It is, he considered, by chemical hydrolysis as induced by micro-organisms that toxic products, like sepsin, tyrotoxin, ptomaines, etc., are elaborated. He pointed out a deficiency in perchloride of mercury as a disinfectant—viz., its want of power of oxidation. While it kills all micro-organisms, it has no effect on the products they elaborate.

PROF. HUMPHREY, in *British Medical*, gave in "Collective Investigations on Aged Persons," some most important information on *good sleeping* and the habit of *early rising*. The habit of early rising, in itself healthy, is a good sign of health when it signifies rapid recovery from fatigue. The nervous exhaustion which keeps a man wakeful during the small hours produces sleep late in the morning. Such exhaustion is caused by anxiety or indiscretion in eating and drinking. But to turn a weary man out of bed at seven o'clock will not prolong his life. According to Prof. Humphrey *good sleeping* is *quick sleeping* in the sense that the reparative process is rapid.

THE Committee of the French Senate on the "Purification of the Seine and the Utilization of Sewage for Agricultural Purposes," examined at length Bourgoïn, Dugardin-Beaumetz, Provost, Pasteur, and others on the following points:—

1st.—If, with the progress of science, we can believe the soil of Gennevilliers and of Achères will permit the destruction of pathogenic germs.

2nd.—If the water which pours itself from drains, after purification, will not contain them.

3rd.—If the vegetables grown from them are not dangerous.

M. Grancher's experiments have hitherto made it appear that the method is not fraught with any danger to the public.

It gives us much pleasure to see the interest the Honorable the Minister of Education is showing in all matters relating to the education of the people in matters of a technical and practical scientific character. The following circular shows how he is determined to obtain all the information possible in order that a proper commencement can be made:—

TORONTO, 3RD DECEMBER, 1888.

DEAR SIR,—I purpose submitting to the Legislative Assembly at its next session, a scheme for establishing, in the School of Practical Science, full courses of instruction in Applied Chemistry, Applied Mechanics and Architecture.

While in the interests of the industrial classes it is necessary that the course of instruction should be thoroughly practical, and at the same time educational, it is also necessary that the special wants of the industries of the country should be kept in view. It occurred to me, therefore, if I only could consult those employing skilled labor of various kinds, that I should be able to provide this special training with more certainty and satisfaction to both manufacturer and artisan.

I have accordingly decided to invite a number of manufacturers, skilled mechanics and others having interests of a similar character, to meet me at the Educational Department on Wednesday the 19th instant, at 2.30 p.m., in order that I may ascertain, if possible, on what particular lines, instruction such as I have above indicated, could be made most useful.

The attention of the meeting will be mainly directed (1) To a consideration of the various kinds of skilled labor now required to carry on the industries of the country and the best means of rendering it more productive and therefore more valuable; (2) To a consideration of what courses of instruction would be necessary to provide such skilled labor at home as is now supplied from abroad, and (3) To enquire what industries (if any) not yet established in Ontario could be made productive, provided we could supply them with skilled labor.

I shall be gratified if you can make it convenient to attend at the time above mentioned and aid with your counsel and experience.

Yours truly,

GEO. W. ROSS,

Minister of Education.