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THE
MONTREAL MEDICAL JOURNAL.

VOL. XXXVII. JULY, 1908. No. 7.

PRESIDENT'S ADDRESS: CANADIAN MEDICAL ASSOCIATION, JUNE 9TH, 1908.

Hygiene and Sanitation—Domestic, Municipal, National, and International.

BY

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This meeting marks a distinct advance, and the commencement of a new era, in the history of the Canadian Medical Association. The adoption last year of our new constitution—which comes into force to-day—has raised us to the status of a national body. It seems, therefore, eminently fitting that our first annual meeting under the new constitution should be held in the national capital, and under the presidency of a medical man holding as an officer of the Federal Government what may be called a national position.

But in this connexion, let me say here, that in addressing you to-night I speak not as a Government official, but as an individual member of this association.

As you know full well, our profoundest feelings are often the most difficult to express. I shall limit myself to saying that, in the presence of this assembly of those who have come from the north, the south, the east and the west of this great country of ours, bringing with them to grace this meeting at the capital of the nation varied and priceless knowledge, how to increase the duration and value of human life, and elevate humanity to the highest standard of physical, mental and moral perfection,—one may well feel many misgivings as to one's ability to meet the full measure of your reasonable requirements.

There have been gods and goddesses of disease and of medicine from very ancient days. Back in the far-away times of the first Chaldean Empire, some five thousand years ago, there was a fever-god, a plague-god, and even a headache-god; and to overcome their evil influence the intervention and good offices were required of Bel-Merodach, the

son of Ea, "by whose spells the sick are restored," and of the Goddess Gula, the Queen of Physicians, "whose wisdom alleviates the ills of humanity."

Similar gods with similar attributes may be traced down through the various empires and dynasties, Babylonian, Theban, Assyrian, Median, Phœnician and Egyptian; until under the Ptolemies the Hellenic gods were identified with the Egyptian, after Alexander the Great of Macedon bridged the gulf dividing Occident and Orient. And then we have Apollo, who was amongst other attributes, god of medicine under his name of Pæan; and the original "pæans of rejoicing" were hymns loudly chanted by the Delphian virgins after Apollo had been sufficiently propitiated to overcome the pestilence. Apollo being possibly too busy about other matters, Æsculapius, his son, is the god of medicine most usually recognized; and then, in the Homeric days, we first hear of a goddess of health, Hygeia, daughter of Æsculapius, and so grand-daughter of Apollo,—Hygeia, the most delightful and pleasing personality of all those that have come down to us from the ancient mythologies. The conjunction of the goddess of health with, and descent from, the gods of medicine is not without its element of flattery to the medical profession. It is at her shrine that I propose to pay tribute this evening.

A writer on hygiene has divided the history of sanitation into four epochs or eras:

The Hebraic epoch, or era of Domestic Sanitation.

The Roman epoch, or era of Municipal Sanitation.

The Gothic epoch, or era of National Sanitation.

The epoch or era of International Sanitation.

This is in some ways a convenient division, and I shall make use of it to a certain extent this evening.

The Hebraic Epoch, or Era of Domestic Sanitation.

With regard to this epoch, I shall not detain you by going over the familiar ground of the wonderful set of hygienic rules and regulations known as the Levitical Law or the Laws of Moses. They were most perfectly adapted to the conditions of life of those to whom they were given, and many of them are good for all times and for all environments.

Amid the wreck of the Dark Ages, what had been taught and what little had been handed down regarding the necessities of hygiene to personal health, was buried. Filth, instead of being abhorred, was almost sanctified. The monks imitated the filthy habits of the hermits and saints of early Christian times, and the early Fathers commended

them. Even St. Jerome used to praise the filthy habits of the hermits. He especially commended an Egyptian hermit who combed his hair on Easter Sunday only, and never washed his clothes at all. Monks, up to the time of the Reformation, thought, or professed to think, that by antithesis pollution of the body indicated cleanliness of the soul.

Only within the last century has the resurrection and re-establishment of sanitation upon a firm and more enduring basis been attempted. And this applies not only to personal and domestic hygiene, but to municipal and national sanitation, on which I shall touch later on.

It has been said that the ruling characteristic of this age is the tendency and effort towards perfecting the physical, intellectual and moral welfare of mankind. In these days of struggle and strenuous existence we hear much of the various means for the advancement and protection of the agricultural, the manufacturing, the mercantile and other interests; and of the race for social distinction, and the efforts people make to trace back their family tree as far as possible towards the one in which their original ancestors used to live and to disport themselves. But what question of mere business or social gain can compare, either in advantage or importance, with the general and individual interest which every one has in the preservation of life and health? No matter what the labour, manual or intellectual, in which one is engaged, nor how productive, each and every mode of obtaining individual supplies and of contributing to the social welfare of the community is, and must ever be, subordinate—both intellectually and generally—to the possession of health.

It is not to be expected that legislators can go much in advance of the views entertained by the mass of the people in the value of preventive and protective measures. "Sanitary instruction is even more important than sanitary legislation," said the late Earl of Derby—himself eminent both as a sanitary instructor and as sanitary legislator.

We must, therefore, be patient and untiring in our efforts to educate and encourage the more intelligent and thoughtful to adopt about their homes and in their daily life hygienic precautions. Their example in these matters will gradually extend by imitation and habit to those less favoured by fortune. Every one can do a little, every one can to a greater or less degree take a lively and practical part in the great crusade against dirt and disease. As has been well said: "If all the individuals in the city appreciated the fact that they are to some extent responsible for the condition of the public health, and, in order to keep their consciences clear, kept their back-yards, cellars, alleys, houses and rooms clean, the reports of the Commissioner of Health would show the result of the multiplied effort."

One of the most difficult parts of the work of improving such sanitary matters has been already greatly strengthened, that is, the getting the people to recognize the fact that dirt is always dangerous,— by the gaining as our potent aid in preventing nuisances of the kind of which we are speaking—the public press of the country. At the present day things notoriously injurious to health are detected by the news-gatherer and commented upon in the daily papers. And neglected, dirty or untidy alleys and premises, the precursors of nuisances which in times past would have gone unnoticed, are now pretty certain to be complained of and remedied. These vigilant and influential voluntary inspectors are powerful agents for good, and they are ever on the advance and render any falling behind impossible.

"In the beginning," said a Persian poet, "Allah took a rose, a lily, a dove, a serpent, a little honey, and a handful of clay. The rose had a thorn, the lily was frail, the dove was timid, the serpent was guileful, the honey was very sweet, and the handful of clay was a handful of clay. Yet when Allah looked at the amalgam, lo! it was a woman." And nowhere better than in the hygiene of the home can this complex creature find her sphere for energy and active work. It is to the women of a family that should naturally come the instilling into the minds of the young, hygienic ideas that will remain with them through life. "Train up a child in the way he should go, and when he is old he will not depart from it," is true now as it was in the days of Solomon. To the women belongs the duty of teaching children to breathe through the nostrils, and to eat slowly; of training her daughters and sisters to protect the upper part of the chest; not to squeeze the waist; to have nothing tight below the knee; to wear thick-soled boots; and skirts clear of the ground, so as not to sweep up and carry home the impurities and bacteria of the streets and pavements. Amongst other phases of domestic sanitation may be mentioned the enforcing of proper ventilation of the home; the purity of the milk supply; the boiling of the drinking water and that used for washing vegetables that are eaten raw, where it is doubtful; the use of ice in a jacket outside and around the water jug, butter dish, etc., and not within; and the removal of dust instead of only redistributing it by stirring it up with broom or duster.

Then again, she can use her influence and authority against late hours at night. There is no doubt that many of the nervous breakdowns which are becoming increasingly common are due in part at least to the modern artificial life, turning so much of the night into day, since the introduction and perfection of artificial light. There can, I take it, be

no doubt that nature intends the hours of darkness for that sleep which restores and prepares. The children's old hymn says:

"When the darkness deepens,
"Stars begin to peep;
"Birds and beasts and flowers
"Soon will be asleep."

"Birds and beasts and flowers" follow this law of nature, and it would be far better for the health of the nation if men would go to sleep with the other beasts, and women fold up and go to rest with the other flowers. I hold with the old saying that one hour's sleep before midnight is worth two hours after it. I do not hold with the other old saying: "six hours sleep for a man, seven for a woman, and eight for a fool." If that opprobrious epithet is to be employed at all in this connexion, it should, in my opinion, be applied to the person who is able to secure eight hours sleep at night, and yet fails to do so. But those eight hours should be between dusk and dawn, instead of our sitting up late under artificial light, and wasting the early daylight hours in sleep.

Then there is to be borne in mind the possibility of the conveyance of consumption and other diseases by kissing. Against the kiss of strong affection and of love, against that most delightful method of putting two and two together, especially when only one pair is feminine, no sanitarian will waste his time in close words. But one may possibly have a chance to obtain a hearing with regard to other forms that might well be abolished or diminished. It would surely be an advance from the sanitary standpoint and one not too hopelessly unreasonable, if the masculine handshake, or some other similar greeting, could be substituted for the formal conventional touching of feminine lips to lips which is so general amongst women on meeting and on separating.

Again, the general and indiscriminate kissing of babies and young children by every friend and visitor might surely be omitted. This would not involve an overwhelming amount of self-denial, for the infant at any rate, and it would protect it from a risk to which we have no right whatever to expose it without its understanding and consent.

I speak of the home aspect of sanitation as being especially women's work, because it is in the home that she finds her fitting and proper sphere. The new woman now-a-days is forcing herself forward as a competitor with man in almost every line of life. Nature herself tells us in several ways that this should not be so. Take as one evidence of

this the distribution of hair upon the face. The man is supplied with a mousfache to act as a dust filter and protection for the nostrils (and it should therefore be all brushed upwards), and a beard to protect the throat and chest. It is he, therefore, that is evidently intended to go out and face the elements and the dust and other dangers of most kinds of work. And the absence of this hirsute addition to the face of the woman must surely be nature's indication that she is intended for the shelter and protection of the home. But though that is her rightful realm, and she is the angel of the home, the source of all its beauty and grace, and sweetness and comfort and joy, it by no means follows that she is to sit there with folded hands in smiling and idle acceptation of our homage and adoration. Looking again at the faces, we see that both sexes have been given eyebrows. Now, the physiological use of the eyebrow is of course to prevent drops of moisture upon the forehead running down into the eye. As women have eyebrows, it is evident that besides the beauty of those eyebrows being a fit subject for the rhapsodies of the lover and the sonnets of the poet, they are given for their physiological purpose also, and that women should carry out all the active and energetic labours symbolized by the expression "the wielding of the broom." (Not the wooden end upon her male relatives except under very exceptional circumstances, but the bushy end). And certainly in no better way can they labour for themselves and for others than in sanitary work in the home.

In this every one can do a little, if only to make one home or one room more bright, more cleanly, more wholesome. Sunlight, pure air and cleanliness are the natural enemies of disease germs. There is no sounder philosophy than is contained in the old sayings: "There is more health in a sunbeam than in drugs, more life in pure air than in the physician's skill," and that "sunlight may fade your carpets but better that than have disease fade your cheeks."

In the temples of Hygeia the statue of Apollo sometimes is found standing with that of the goddess of health for worship. This is possibly because he was originally a god of medicine. I like to think, however, that there may be another explanation, and that is that he is present in his character of Helius the sun-god; and that this placing of the sun-god in the temple of the goddess of health shows an appreciation even at that day of the health-giving effects of sunshine.

The Roman Epoch or Era of Municipal Sanitation

This epoch or era is so named because the great city of Rome set perhaps the most remarkable example of this phase of preventive medicine; a city which worshipped as a divinity the sweet smiling goddess of

health; a city in whose municipal administration the highest place was accorded to the sanitary corps; a city which supplied pure drinking water of crystalline purity from the distant mountain lakes and streams by its seven or eight great aqueducts, of which four still remain; aqueducts dating back to centuries before the Christian era; aqueducts considered so important that under Nerva and Trajan no less than seven hundred and twenty "curatores aquarum," engineers, architects and others, were continuously employed at the public expense to look after the water supply of the city; a city with public baths capable of accommodating all the citizens, for there were some eight hundred bath-houses throughout the city, the Thermae of Caracalla, Diocletian, Nero, Titus, Agrippa, and countless others; a city with a system of sewers dating back to Tarquinius Priscus and Tarquinius Superbus, six hundred years B.C. The Cloaca Maxima, the main drain, built in triple arches of Etruscan architecture, was so large that barges could float upon it all under the city; and so well constructed that no earthquake or other force has altered it. Though choked up nearly to its top by the artificial elevation of the surface of modern Rome, it is curious to see it still serving as the common sewer of the city after the lapse of nearly three thousand years. Under the Empire, condemned criminals repaired the sewers. To what better work could our modern jail birds be put, than that of similarly working for the sanitary well-being of their communities?

A proper drainage system is the first great duty of municipal sanitation. It must precede the water works, and be in readiness to carry off the water. To reverse this order has been well stigmatized as preposterous in its original signification of "pre," first, and "posterus," coming last, or putting the cart before the horse. And the very worst use that can be made of drainage is to pollute some river or stream with it; it is a waste of valuable fertilizers and a wrong to other communities down stream. Cities and towns must ere long come to the purification of their sewage by septic tanks, chemical precipitation tanks, or filter beds, and the using up of the effluent in subsoil irrigation.

A good water supply is the next most pressing duty of municipal sanitation. As a model from the past in this respect, I have spoken of Rome. Jerusalem also, before the days of Solomon, had aqueducts bringing water from miles distant, and through a reservoir which served as a sedimentation tank. We have another notable example in Tenochtitlan, the ancient Toltec capital, now the city of Mexico, with its admirable water works dating back long before the first meeting of Cortez and Montezuma, the Aztec chief. The difficulty of finding a pure water supply in sufficient quantity is facing every city.

With the increase of population it is hardly possible to find a near-by water shed which is not more or less contaminated by the wastes of human life. Cities have too often either to adopt or continue a suspicious supply, or to trust to methods of filtration for the removal of the disease producing elements. The remedy in some cases is fortunately to be found, as by Rome and Mexico, in bringing water from the distant mountains where it is pure and undefiled. Such a supply could be obtained for this city from the Laurentian Lakes to the north of us. This, or the purification of the water supply through filter beds, is a necessity that must soon be faced by this as by every other city.

Amongst the many further duties of municipal sanitation, I need only mention the inspection of milk, food, fruit, lodging houses, schools, public stables, abattoirs, etc; the prevention of the exposure of meat and bread to dust, flies, and unnecessary handling; the removal of garbage and dead animals, the prevention or at least the limitation of the soft coal smoke nuisance, and the inspection of plumbing. I have mentioned this last because I want to say a word about it. The health of the home and the household is more at the mercy of, and depends more upon, the work of the plumber than the doctor. There may be differences of opinion as to whether or no sewer gas carries the actual micro-organisms of disease; but all, I take it, will agree that the breathing of it in the home and the bedroom is calculated to so lower the resisting power of the body as to make it the more exposed to become the victim of contact infection. In the larger cities there are inspectors of plumbing. There should be such officers in every municipality where there is a drainage system. Soil pipes should pass along the basement ceiling and pass underground only outside the walls, and must be laid under the house. And every joint and fixture should be made and connected by a skilled workman and not by an apprentice. In the book of the Proverbs of Solomon the Son of David, King of Israel, we read that there were three things that were too wonderful for Agur the son of Jakeh, yea, four things which he understood not: "The way of an eagle in the air, the way of a serpent upon a rock, the way of a ship in the midst of the sea, and the way of a man with a maid." It has been said that had that wise man lived in our day he would have been tempted to add a fifth cause of wonderment: "the way of a plumber with the drainage of a house." There are doubtless reliable, well-informed men amongst them, but the public should have greater protection. In my opinion, plumbers should be admitted to practice only under a license in sanitary work and drainage, given only after examination,—some similar system to that very rightly required for physicians for the security and protection of the people. And the public should be

educated and encouraged to choose for employment as plumbers and as inspectors men holding diplomas and certificates, such for instance as those of the Royal Sanitary Institute, now procurable in this country.

Another duty in municipal sanitation is the enforcement of the notification to the City Health Office of all cases of infectious disease including tuberculosis. And the keeping of a House Register in which the medical and sanitary history of each house should be written, the name and number of the cases of infectious disease, with their dates, and the means taken to improve the drainage and sanitary condition of the house. Such a register is kept in many cities; it should be so in all. Reference to it would be of inestimable value to those looking at a house with the view of purchasing or hiring it. It would also be a potent lever to move holders of house properties to keep them in proper sanitary condition.

Still another municipal duty is that of the suppression or extirpation of the rat. Rats are always a nuisance of the first order, and as carriers of disease a source of public danger. From the standpoint of health they possess no redeeming qualities, and the more quickly a great diminution in their numbers is effected the better it will be for everybody The Rat Act of Denmark is one of the most remarkable laws in the history of legislation. It is the result of the grim fight carried on for ten long years by one man, Zuschlag, a civil engineer, of Copenhagen, against the most merciless ridicule poured out by the Danish press, the galling contempt of scientists, and the lethargy of the people; but in the end he finds himself acclaimed as a benefactor of his country. He is now President of the powerful and influential "Association Internationale pour la destruction rationelle des Rats," which has a membership of two thousand men of standing and known influence. In several countries governments or port authorities have adopted Zuschlag's premium system of a national campaign on this principle. In England a society has recently been formed for the destruction of rats with the support of such men as Sir Patrick Manson, Sir James Crichton Browne, Sir T. Lauder Brunton, Lord Avebury, and Professor Simpson. It has been calculated that there are as many rats in a country as there are men, women and children, and that each rat destroys one farthing's worth of food, grain or material per day. At that rate the six million rats of Canada cost us the enormous sum of over thirty thousand dollars per day.

But in addition to this, is the other terrible indictment as the conveyors and disseminators of disease germs. That enteric fever is spread by them is well established. And the important, indeed the all-important, part they play in the introduction and extension of Bubonic Plague is well summed up in the recent report of the Plague Committee

appointed by the Secretary of State for India in the statement to the effect that unless the destruction of rats is carried out with the utmost energy it will be in vain to hope to get the plague under control.

The last number of the British Medical Journal has an article on "The Cat as a preventor of Plague." In villages in India where cats are numerous rats are scarce and plague unknown. In adjacent villages, where cats are scarce and rats numerous plague prevails. The cultivation of the cat has an advantage over some other plague prevention in that it does not conflict with any caste prejudices.

As Dr. Murphy has pointed out, the connection between rats and plague has been apparently known since very early times. We read in the Bible that when the Philistines, after they had taken the Ark of God, were stricken with what was probably the Bubonic Plague, they evidently recognized as we do to-day that the disease was carried from one section of the country to another by rats, for they endeavoured to propitiate Jehovah by offering five golden images of the most noticeable result of the disease, and five golden images of the family of Mus, probably Mus decumanus—now known as the rat,—images of the probable disseminators of the disease.

The Gothic Epoch or Era of National Sanitation.

This epoch has been given its name because Theodoric the Great, Theodoric the Ostrogoth, was the first in recent history to take a wide or national view in such matters. The torrent of vital energy poured into the west by the Goths, with the collapse of the old inanimate routine of government and the old inanimate social system, the foundation of a new kind of government, and the rise of a new social fabric instinct and permeated through and through with the energy of the invading races, found one of its manifestations in the establishment of National Sanitation.

After the Conquest, with all Italy laid at his feet, Theodoric held court in the city of Ravenna by the Adriatic, and there placed the protection of the public health entirely under the control of the central government, and recognized the great truth later enunciated by one of England's Prime Ministers: "The health of the people is the first duty of the statesman."

In former ages the three great enemies of National welfare, happiness and progress were deemed to be war, famine and pestilence. Until less than a century ago all these were regarded as beyond the realm and reach of human science, and were accepted as the infliction of the Gods, or as the mysterious scourges of Providence whereby nations were chastened for their sins.

From war and the fear of war, we in this country are most fortunately and happily free.

As for famine, the genius of man has so wrought upon steam, upon electricity, and other forces of nature, that not only have the products of the earth been vastly increased, but by means of rapid intercommunication all nations have been brought into close relations, one easily supplying what another lacks. Thus national famines have disappeared, or are disappearing from the world, together with the ignorance that tolerated them.

So for pestilence. We claim, too, that disease and pestilence are not the rightful masters of man, and tyrannize over him only by reason of his ignorance or supineness. They are merely the humble subjects of nature, and come and go in obedience to her laws.

Accepting the estimate made by statisticians of the financial value of the life of each able bodied industrious man at sixteen hundred dollars, and the average cash value of each man, woman, and adolescent above twelve years of age, at one thousand dollars, we have then some slight conception of the financial value of the life of each citizen, and the loss to the wealth of the country from sickness and death from preventable diseases which destroy thousands of lives annually, the cash value of which amounts to millions. The eight thousand who die annually in Canada from Tuberculosis alone represent a financial loss of at least eight million dollars. Even from this low monetary point of view, therefore, it needs no laboured argument to prove that it should be the first duty of all governments, national and provincial, to protect the public health by enactments based upon the knowledge that sanitary science has evolved, and to see that all the members of society are benefited by them.

Nations and communities have it in their power to diminish the causes which produce sickness and premature death. From even the partial wise use of this power during the years that are recently past, the average duration of human life is slowly but progressively on the increase. But much, very much, remains to be done. And every measure which relates to the improvement of the sanitary condition of the people generally deserves the earnest support of statesmen, and the favour and hearty support of all.

Provision has been made by the National government to protect this country at large against the exotic diseases—the diseases to be detected by quarantine and by inspection— threatening from abroad.

The country has been and is so fairly protected from their inroads that every one takes their absence as a matter of course without stopping

to think of the work constantly going on at the outposts of coast and frontier. But it is the diseases we have always with us, the well known preventable diseases, that produce the greatest destruction of human life, and swell the total of the general suffering and distress in all parts of the country.

Some of these, such as enteric fever, scarlet fever, measles and diphtheria, are left in this country to Provincial responsibility. But there are some other diseases and some other points as to which it seems to me the national power can best be exercised.

Tuberculosis, for instance. This is a disease widespread throughout the whole Dominion, and it cannot be kept within municipal or provincial bounds, if only because the eastern sufferer is so apt to seek a health resort in the west. The annual death rate from tuberculosis is so high, and the financial loss to the country from these deaths and from the illness which precedes them is so grave a national matter, that it seems to me it should not be left to the separate actions of the various provinces but should be at least co-ordinated and arranged by the national Government. Sanatoria are good in their way, and would be better if they could be kept for the reception of incipient cases, to be discharged cured to make room for others. The beginning cases, however, are not those that appeal most loudly to the sympathy of the onlooker. And too often under pressure political, personal, religious and charitable, the few beds of the sanatorium are promptly filled with incurable cases, and so their highest mission fails. The same amount of money spent in dispensaries, day camps, and the dissemination of pamphlets, leaflets and other literature on the prevention of the disease, would reach and benefit hundreds for each one the sanatorium can aid. The enforcement of notification of tuberculosis also, with the appointment of inspectors to follow up each case where the visiting physician cannot or does not do so, seems to me essentially a national work and responsibility.

The prevention of smallpox also should be distinctly a matter of national sanitation. We are not only threatened with it from the Orient, from Europe, from the United States, and from South America, but from England also, owing to her retrograde legislation nullifying compulsory vaccination by the admission of conscientious objections, and yet not putting smallpox on the list of her quarantinable diseases.

Compulsory vaccination in infancy and compulsory re-vaccination in adolescence should be the national law. By such laws smallpox has been made to practically disappear from Germany. This disease is unknown in her army. In the entire German Empire during the whole of 1906 there were but 26 cases of smallpox and 5 deaths, and these cases

were largely imported from neighbouring countries. Why cannot we learn from such an object lesson as that, confirming as it does the experience of every smallpox hospital where vaccination keeps the attendants free from the disease?

I would go further still. For the victims of unpreventable diseases I have both sympathy and pity. Small pox, however, is entirely preventable. For its victims, or for those who are responsible for them, I have nothing but condemnation. Not only would I make vaccination and re-vaccination compulsory, but I would make having smallpox a penal offence. In no other way that is avoidable is one permitted to be, or to harbour what is a nuisance and an injury to one's neighbours. An outbreak of smallpox often paralyzes the travel and traffic of a small community. It always injures even the larger ones. It is a distinctly preventable disease. No one has any right to harbour an unvaccinated person on his premises any more than he has to store a supply of dynamite. No one has any right to have it, and every offender in this particular, every adult who has smallpox and the parent or guardian of every minor who has it, should in my judgment be sent, as soon as the risk of infection is over, to pick oakum for a term in the common jail, for having been guilty of a wanton and quite avoidable nuisance and misdemeanor. Or, still better, to work for a similar period at forced labour in the sanitary improvement of the municipality, as I have suggested for our prisoners before.

Railroad and Car sanitation should also come under National Sanitation. Under this heading may be briefly mentioned the prevention of the possible spread of typhoid dejecta along the roadbed, to directly infect or to be blown as dust into neighbouring sources of water supply; the use of non-absorbent coverings and curtains; the general use in sleeping cars of the thin so called emergency curtains which permit the free passage of air but not of light; the placing of ice in a jacket around the drinking water, and not in it; the provision of a separate basin over which alone toothbrushes may be used; the proper ventilation of, and preservation of temperature in, the cars, and their frequent and efficient disinfection; and the abolition of the brushing down of passengers by porters in the midst of the car, whereby the dust from each in turn is distributed over the persons and into the lungs of his neighbours. And this in order that a rapacious porter may be the more sure of the holdup for his tip. The brushing ,when required, should be done only in a corridor beyond a swing door.

If temperance be a thing to be secured by legislation, that legislation may well be national. Nothing certainly injures health more than the

diseases of the various organs that are affected by improper food and the abuse of spirituous liquour. With regard to improper food as far as quality is concerned, national sanitation has already taken hold of matters connected with the adulteration of food and drugs, and the inspection of meat for export, although not yet that of meat for our own home use.

With regard to the liquor traffic. Of all temperance legislation, the most temperate and therefore—to my mind—the most likely to gain the desired end, is that known as the Gothenburg system. The elimination of private profit upon the sale of spirits, and the commission upon the sale of non-intoxicants, are of course the essential points of this most excellent system, with the introduction and extension of which in England the name of His Excellency our Governor General is so closely connected.

I cannot pass from the subject of national sanitation without referring—still in my individual capacity, not in my official one—to the resolutions that have been passed annually since 1902 by this Association, urging upon the national Government the collecting together of national matters medical and sanitary—now scattered amongst the various departments—into a Department of Public Health under one of the existing Ministers. In connection with such a department there should, in my judgment, be a national bacteriological laboratory, with branches for the supply of vaccine and of the various sera and anti-toxins. These should be prepared and tested by men on salary and without any personal interest in their sale. And they should be issued bearing the Government stamp as a guarantee of purity and reliability and marked with a date limit of efficiency. The general practitioner throughout the country would then know just what he is using, and both he and his patient would be much better protected than they are at present. Moreover, in such a national laboratory there might well be bacteriologists and chemists engaged in original research. This country should rise above the position of hanging on to the skirts of other nations and waiting to hear from them. It is fully time that in such a national laboratory Canada also should have her investigators taking their part in forwarding the advances of science. In such a national department of Public Health there would be no interference with Provincial Rights, only a domestic re-arrangement for greater efficiency. On the contrary, one of my dreams is the creation of a national board or council of Public Health composed of the occupier of the federal office I now hold, and of a representative from each of the Provincial Boards of Health, to meet at the capital from time to time to advise the National Government in public health questions affecting the country at large. Advice and recommendations from a

council so composed should carry more weight with the Dominion Government, and with the people, than those of any one sanitary adviser be he ever so able and ever so experienced.

Departments of Public Health already exist in some countries. They are being actively striven for in Great Britain, in the United States, in Mexico and in Cuba. That we will ultimately have one in Canada I in no wise doubt.

The Epoch or Era of International Sanitation.

Within the last generation the idea has been spreading that those nations that are most active in sanitary and hygienic movements are dependent on each other for complete success. This idea has found expression in international official conferences such as those of Venice, and London, and Paris; in the international congress of Hygiene and Demography; in such international conventions as those of the Republics of North and South America; of those on Tuberculosis; in such international societies as the American Public Health Association which embraces the United States, Canada, Mexico and Cuba; and in the general international exchange of health news and bulletins.

International agreement, as a recent writer has pointed out, or even a declaration of policy to ameliorate the local conditions that cause disease, so that no people should be allowed to live without sufficiency of pure air and light, pure water and pure food, good drainage and sewerage, in other words except under the healthful environments of man which are his inalienable right,—such an agreement would furnish objective employment of national thought and energy, and by the substitution of one energy for another detract by so much from the consideration of armament and war. It has been suggested that in the search by peace congresses for measures to be recommended to the Hague Tribunal for consideration as measures towards universal disarmament, or partial disarmament, or arbitration or peace, such international sanitation as I have alluded to above might be included as tending directly and indirectly towards the full or partial abolition of war.

It is devoutly to be hoped that in the process of evolution of international sanitation, the time may be not far distant when it may be possible that there shall be Canadian Medical Officers responsible to the Dominion Government in every port of emigrant departure for this country in Europe and in the Orient. The action of such a body of men in vaccination, disinfection and careful inspection before departure would lighten the work of quarantine and immigration officials on this side. And what is far more important, it would remove to a great

extent the chances of outbreak of disease during the voyage, thus lessening the risk of infection for all classes of persons, upon the vessel. It would benefit the shipping interests greatly both in time and in money. Moreover, it would obviate the hardships which must necessarily accrue in many cases from the sending back of undesirable immigrants from the port of arrival in this country.

In conclusion, I would say that I cannot hope that I have told you anything new this evening. The truths of sanitation are well established and well known. We cannot plead now as in days of Hosea the Prophet when it was written: "The people are destroyed for lack of knowledge." But these truths—like others—require iteration and reiteration, line upon line, line upon line, precept upon precept, precept upon precept, here a little and there a little.

The best I can hope for is that I may have in some small degree presented to you some old thoughts in new settings. And I may indeed be well content if anything that I have said tends to make these truths—ever old and ever new—sink more deeply into your minds and memories, and if, by so doing, I may have advanced even by the smallest step our progress towards that time when the four sanitary epochs or eras of which I have spoken—the Domestic, Municipal, the National, and the International—may be followed by a fifth, towards which we are all striving and yearning, the epoch or era of Universal Sanitation.

SOME FURTHER OBSERVATIONS ON PNEUMOTHORAX WITH ESPECIAL REFERENCE TO "SPONTANEOUS PNEUMOTHORAX" OR PNEUMOTHORAX IN THOSE APPARENTLY HEALTHY.*

BY

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The interest and pleasure which one has in studying a subject in clinical medicine is usually sustained only by following one's illustrative cases to a termination either in health, or more pronounced features of the disease, or in death. About ten years ago, I was able to get together twelve cases of pneumothorax all of which I had more or less intimately observed. In that paper the etiology, symptoms and signs of this condition were briefly discussed. Of these cases (12 in all) six were dead, three were lost sight of, one was comfortable while at rest, one was at work, and one was in health. That patient who was comfortable after

* Read before the Canadian Medical Association, Ottawa, June 11th, 1906.

considerable improvement was lost sight of. The other two have been followed, one for four years, and the other to the present time.

In addition to further observations made upon these cases, fully as many more as were referred to in my first paper have been under my care, and from these, five have been selected presenting features of special interest.

The two patients whose progress has been noted since writing upon this subject in 1898 may be referred to before taking up the new cases, and for the sake of clearness their histories may be reviewed.

Case 1: is Case 7 in my former series, a saddler, aged 59, without history of previous thoracic disease. He was seen with Dr. H. S. Shaw in consultation early in 1898. The history given was that in Nov. 1897 he had fallen and broken his leg. Going to bed on Nov. 27th, 1897, he remained under treatment in bed until Dec. 22nd, 1897, when he had some pain on the right side of his chest. It was rather transient, lasting but a few days. On the 1st of Jany., 1898, while still in bed, he had a severe seizure of pain in the right side of his chest and a few moist rales were heard over this area. On the following day dyspnoea set in and signs of right side pneumothorax were pronounced, the heart was displaced to the left, the coin sound was widely heard, and amphoric breathing was present. Improvement followed, the heart resumed its normal position, the coin sound disappeared in a few weeks, no signs of fluid were ever discovered, and on March 1st, 1898, he was again at his work.

Up to the present, ten years after, there has been no recurrence of the condition.

The cause of pneumothorax in this patient is doubtful. There was nothing pointing to tuberculosis at the time of our consultation, nor has any such sign developed up to the present, and when one considers that it occurred in a patient with no exhausting illness or cardiac disease likely to induce thrombosis or embolism with subsequent localized pulmonary gangrene, the difficulty of explanation is not lessened.

Case No. 2: is Case No. 6 (3370-6686) of my former series, and as already stated, she was under observation when my paper was published. She was one in whom the signs and symptoms of pneumothorax appeared during a period of failing health. The general condition was such that a tuberculous process was considered to be the active cause, although one could not establish that view. No fluid in the pleura could be demonstrated. The signs of pneumothorax gradually disappeared and the patient was lost sight of.

She returned four years later (Feb. 28, 1902) with marked signs of pulmonary tuberculosis in both lungs. She gave a history of gradual

failure of her strength with cough and tendency to "take cold," since she was first under our observation. The pneumothorax was recovered from, and there were no signs of pleural effusion.

This case is interesting as it illustrates, doubtless, pneumothorax early in the course of pulmonary tuberculosis, and one which apparently went on to recovery without the formation of fluid.

The effusion in "every tuberculosis pneumothorax must become purulent." Such has been the teaching generally accepted, and perhaps still has its very wide application. Senator, in 1881, was the first to describe serous effusion in tuberculous cases of pneumothorax, and since this paper many similar cases have been reported.

Drasche points out that in some cases due to tuberculosis an exudate may remain serous for months while in others it becomes purulent in a few hours.

S. West says "that speaking generally the chances of the effusion in pneumothorax being serous, seropurulent, or purulent, are about even; in other words, that a purulent effusion is met with in only one case out of three."

Case 3: The following notes refer to a patient at present under my care. She was first seen in March, '08, and gave a history of failing strength, with cough and loss of weight since last Autumn. She had suffered somewhat from left-sided thoracic pain, but there had been no severe dyspnoea. The signs pointed to an infiltration of the left pulmonary apex, extending rather widely over the upper lobe. She was advised to remain in bed, and did so, but when seen again two or three days later at her home in consultation with Dr. Robert Wilson, she had well-marked signs of left pneumothorax, and fluid was present in the pleura. The fluid increased rather rapidly and on the 18th of March, about ten days after it was discovered, paracentesis and removal by syphonage of a portion of the fluid was done. During the operation we took occasion to observe by the aid of the fluoroscope the changes in the level of the fluid, and if possible to detect signs of the unfolding or expanding lung. We succeeded in one particular only. Whereas before aspiration the whole left lung field was dark as the fluid was withdrawn, the density of the shadow lessened, and a clear space appeared above, bounded by a horizontal line below, which rested at the level of the 6th rib posteriorly when the operation was over.

One was able to see in this patient's thorax the wave upon the surface of the fluid, induced by the heart beat. Sixty ounces of clear, straw-colored fluid were withdrawn. On the 23rd of March, thirteen ounces were withdrawn and again on the 30th of March, fifteen ounces clear,

straw-colored fluid. After another month the fluid was found at the fourth aspiration, clear as before. The condition of the patient improved; her temperature was normal for some weeks, and the degree of cardiac displacement was less marked. The succussion splash and coin sound disappeared, and the patient was allowed to go to the country. This case seemed to be one of pulmonary tuberculosis. The left lung was involved at the apex and the history was in favor of such a view. The opthalmo-tuberculin reaction, however, was negative even with the stronger solution. There has been no sputum, and the improvement was so favorable with a pleural exudate remaining serous so long that we hoped at least that another cause might lie at the bottom of this case. She returned, however, two weeks ago with fever and hoarseness. The coin sound and splash were again heard and the laryngologist describes an ulceration of the larynx of tuberculous nature.

Case 4: Another case of interest from the standpoint of the cause and course occurred in the practice of Dr. H. S. Shaw with whom I saw the patient some years ago. He was an architect, 22 years of age, whose history, both family and personal, contained no statements pointing to tuberculosis. Awakening on a Sunday morning in Oct., 1905, he felt pain in the front of his chest on the right side. He was a member of a church choir, and took his place in the services that day, but on his return he took to his bed, yet without cough or dyspnoea.

On the following day (Monday) after a good night, he desired to go down to business, but he was persuaded to have medical advice. When first examined the patient was afebrile, with a pulse of 80 and respirations of 15. The heart was displaced to the left, the right chest was unusually resonant, and amphoric breathing with the bruit d'airain (coin test) positive. There were no signs of fluid at any time. The recovery was most satisfactory, and in about three weeks he was allowed out. The patient has been under Dr. Shaw's observation and has had no recurrence. There have been no signs of pulmonary disease of any kind; he is well nourished, and in the full enjoyment of health.

Case 5: G.W., aged 18, stenographer, stated that on the evening of the 11th Nov., 1906, he was seized with a severe pain in his chest, increased by respiration and cough, and attended by marked dyspnoea. The family and personal history gave us no clue to a tuberculous infection or tendency. The patient admitted having taken some violent exercise some days before, running some miles.

He was a youth of very fair complexion and of slender build, weighing 125 pounds. He lay upon his back in bed, any change of position giving him severe pain in the right axillary and lower costal regions.

The typical features of a right-sided pneumothorax were clearly made out. For the first few days signs of fluid were absent. Fluid was demonstrated, however, quite early in this case, both by the ordinary methods of examination and by the fluoroscope when examined under the X-rays in the sitting position. The upper line of the fluid was horizontal, broken only by a wave-like shadow running across it with each heart-beat. A similar yet higher wave shadow was produced in shaking the patient.

The course was constantly favorable; pain lessened, the dyspnoea disappeared; there was no fever, and the amount of pleural effusion was never embarrassing. There seemed, therefore, no cause for interfering. After about five weeks in the ward, he was discharged on the 22nd of Dec., practically free of physical signs of disease. He was examined again on the 2nd of June, 1908. At that date, 18 months after the onset of the illness, he remarked that he was feeling well, and had not been ill, with but one exception of two weeks with a "cold," since the autumn of 1906. He looked thin, of rather high color, and weighed about the same as when in the hospital, (120½ lbs.).

Case. 6. Again this condition was discovered in a man of 41 years of age, apparently healthy. He gave no account of loss of weight or failing strength, of strenuous effort, nor of unusual laughing or coughing. The thoracic organs had always been healthy, so far as the patient knew. On getting up on the morning of June 27, 1902, he did not feel quite himself, and while out for a walk he felt very weak. On returning to his house something "gave way" in his chest, and shortness of breath seized him and he fainted. On recovering consciousness the dyspnoea persisted.

On examination in July, when first seen in consultation the heart was displaced to the right, the percussion note over the left side was hyperresonant, and on auscultation the breath sounds were very poorly heard. There was no succussion and the coin sound was absent. Later, however, faint Hippocratic succussion was made out but the coin test and amphoric breathing were never present under my observation. The fluoroscopic examination was interesting, although made late in the course of this case, as it showed a characteristic horizontal line at the lower part of the left lung area—interrupted by a slight wave synchronous with each heart beat.

The patient made an uninterrupted recovery. There was never any fever. He was seen again, about six years later, Feb., 1908, when he looked as if in the best of health. He has had no recurrence nor any symptom pointing to disease of heart, lungs, or pleura.

Case 7. The onset of symptoms of pneumothorax while the patient is in bed, finds another illustration in the following instance. A young

man, 24 years of age, Laboratory Assistant in the Royal Victoria Hospital, went to bed on Sunday evening, April 19th, 1908, in good health, after a walk of about two hours, which did not give him noticeable fatigue. He awoke on the following morning, about two o'clock, with a sharp pain in the left side of the chest, near the heart. It was stitch-like and recurrent, and associated with cough. In a day or so he expectorated mucopurulent dark-tinged sputum. Within a few days the pain had entirely disappeared. The signs of pneumothorax on the left side, suspected from the first day, were clearly made out on the second examination. Amphoric breathing and the coin test were present, but Hippocratic succussion was never heard. There was no severe dyspnoea as in our previous case. Tuberculosis was not suggested by either his personal or his family history. He had been a pathological laboratory worker in Scotland, and since coming to Canada about two years ago, he has been employed in the pathological laboratory of the Royal Victoria Hospital. It was thought that the dark tinge to be seen in the sputum could be attributed to the dust around the pathological department where considerable reconstruction was going on. It was not due to blood. The sputum examined several times was always negative to the stains for tubercle bacilli. The signs were such in this case that one was led to conclude that only a partial pneumothorax existed. The heart was but little displaced to the right as shown by the fluoroscope and skiagraph although the præcordial dulness was completely lost. Then again, there was an area of diminished resonance on the left, passing out beneath the left pectoral muscle toward the axilla. By the fluoroscope one could see in this position a shadow of triangular shape with its base upon the cardiac shadow and its apex pointing toward the left axilla. With the pulsations of the heart, the boundaries of this triangular shadow moved, in fact, pulsated. An explanation of this shadow has not been decided upon. It disappeared with accompanying signs of the pneumothorax. From its position and shape the pulsation and the density of shadow, one might think of an intralobar-encapsulated pleural effusion, which was influenced either directly or through pleuropericardial adhesions by the heart's action.

The coin sound was present in this case having a limited area over which it could be heard. By the lines marking the area of the positiveness of this test, we have a further suggestion in favor of a partial pneumothorax (diagram).

This patient progressed favorably, and when last examined on the 5th inst., (June '08), heart dullness was normal. The impulse was plainly felt below the left nipple in the 5th intercostal space, and there were no signs remaining of the condition above described.

The etiology of this rather rare thoracic condition has always attracted much attention, and as we all know, tuberculosis claims its full share in percentages, ranging from seventy-eight to ninety. Five of our cases belong to that group classified as "Spontaneous pneumothorax." We might call them "Spontaneous non-tuberculous pneumothorax" cases. Non-tuberculous these cases may be, and doubtless are, in most instances, yet at the same time we are not free to go so far as Fussell and Riesman, who, while explaining these spontaneous cases by emphysema argue that if emphysema existed it was moderate and not possible of diagnosis, and as a moderate degree of emphysema in adults cannot be considered a sign of disease post mortem, they conclude "that pneumothorax can occur with a practically healthy lung from rupture of an emphysematous vesicle."

The exception one might take to this argument first is that a "practically healthy lung" is one capable of performing the natural function of respiration, etc., and able to withstand coughing, sneezing and ordinary effects of lifting, and one certainly not giving out or rupturing at any point during the quiet hours of sleep; while on the other hand, an emphysematous vesicle is quite as much a sign of disease as an emphysematous lung, the difference being one only of degree, and the danger, doubtless, varying accordingly.

In looking over the cases forming the foundation of this paper, five of which are distinctly those of spontaneous pneumothorax, three doubtless occurred while the patients were in bed, Nos. 1, 4 and 7. In Case 4, the patient "felt pain" in the chest on awakening in the morning," and in Case 6, "the patient did not feel *himself* on getting up in the morning." This form of pneumothorax seems to be first experienced, while in bed or on getting up, as above described, in several parallel instances, and while the pleural opening may arise during the quietness of sleep, a more reasonable explanation might be found in the suggestion that the process is a slow one, the opening small and possibly, at first, valvular, and the escape of air and the collapse of the lung alike hindered by pleural adhesions. The original precipitating cause, a sneeze, a sudden strain, a long walk, a run of several miles, hours before having initiated the process which slowly develops during the hours of sleep.

The four heads under which Zahn includes those cases arising from a solution of continuity of the pulmonary pleura without purulent inflamation are:

(1) Pneumothorax from rupture of an emphysematous vesicle:
(2) Those due to rupture of an interstital pleural bleb;
(3) Those due to tearing of the pleura;
(4) Those due to atrophy of the visceral pleura.

When one considers any or all of these conditions from the clinical standpoint, one must conclude that any one and all of them may exist in those apparently healthy, and yet a condition favoring pneumothorax is present.

To draw conclusions from this small group of cases, is not justifiable, yet when compared with a larger group such as that reported by Fussell and Riesman already quoted, one finds these common characteristics:

1. Spontaneous pneumothorax occurs in healthy individuals—mostly young men.
2. The symptoms often begin in the night or early morning.
3. There is usually no formation of fluid.
4. Febrile reaction is rare.
5. The patients usually recover.

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OPSONIC TECHNIQUE.

BY

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During the last few years much has been written regarding the vaccine treatment of bacterial infections. Very little, however, has been said about the preparation of these vaccines and their mode of administration. It is my purpose to give a concise outline which may enable the student or practitioner to apply this method of treatment in general practice.

Wright advanced the theory that there was something in the blood serum which so acted upon invading bacteria as to render them more susceptible to phagocytosis. This substance he called "Opsonin," and the sensitizing power of the serum of an infected individual compared

with that of the normal subject as revealed by the phagocytic count was called by the same investigator the "Opsonic Index."

Now, it is our aim to stimulate, by means of this therapeutic agent (vaccine) the production of opsonins in the blood an thereby enable the polymorphonuclear neutrophils to ingest the infecting organism in larger numbers. This we do by obtaining the organism in pure culture, devitalizing the washings from the medium, and, after standardization and control, reinoculating this emulsion into the subcutaneous tissues of the patient.

But, before proceeding, I would here outline some experiments to substantiate the theory as to the existence of the so-called opsonic elements.

Exp. 1.—Take equal quantities of washed blood corpuscles, bacterial emulsion and normal saline solution, incubate after thoroughly admixing for fifteen minutes at 37° C. Then prepare films and stain. We find that no bacteria, or at least very few, will be ingested by the leucocytes (spontaneous phagocytosis).

Exp. 2.—Take equal quantities of the same washed cells and emulsion, but substituting blood serum for the saline solution, and we find the white cells containing numerous bacteria.

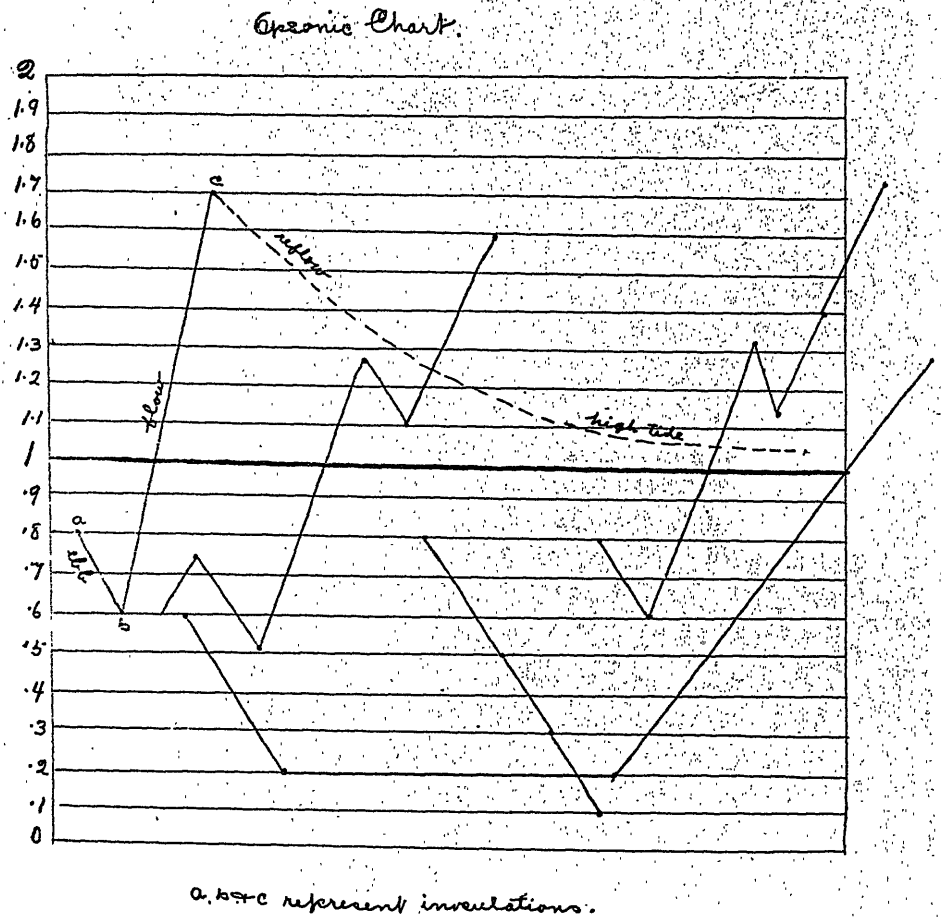
Exp. 3.—In a similar manner prepare, first, slides employing the serum expressed from an infected area; secondly, using serum obtained from the freely circulating blood of the same individual, and we find in the first case very few bacteria ingested (deopsonized serum); in the second, a much more extensive phagocytosis.

Although many infections have been treated by vaccine inoculation, to simplify my explanation, I shall deal with one only, taking for example, staphylococcus aureus, the infecting agent in furunculosis. We cleanse the surface of the lesion with alcohol, puncture with a sterilized needle, transfer the expressed pus to a plain agar slant and distribute evenly over the surface of the medium, in order, if possible, to secure a sufficiently abundant original growth for the preparation of the vaccine. The tube is then incubated for from twelve to eighteen hours, the growth is washed off with .85 per cent. saline solution (about six c.c. being sufficient for one tube). This is decanted into a sterilized test tube, shaken for ten minutes to disintegrate the clumps, and finally, after withdrawing specimens for standardizing purposes, the emulsion is devitalized in a water bath at 60° C. for one hour. Control cultures are then made and the vaccine diluted to a proper strength for use, the usual standard being five hundred millions to the cubic centimetre. The vaccine is best kept in 50 c.c. brown glass bottles with paraffined

rubber caps, one quarter per cent. of pure lysol being added as a preservative.

Standardization of the Vaccines.

After trying many methods, Wright hit upon the following: Using a fine graduated capillary pipet draw up equal volumes of (*a*) blood from the finger, (*b*) emulsion before it is devitalized, together with



(*c*) two volumes .85 per cent. saline solution as a diluent. Expel the contents on a slide, mix thoroughly, and prepare films in the usual way. After fixation and staining a count is made of five hundred red cells, noting in a separate column the number of organisms in the various fields covered.

A comparison of the two tables, on the basis of the known number of red cells per cubic millimeter of blood, gives at once the number of

organisms per cm. of the emulsion. Thus, if in counting five hundred red cells, one thousand cocci are met with in the same fields, the vaccine will be known to contain ten millions organisms per c.m., or ten thousand millions per c.c. In diluting such a vaccine, two and a half c.c. of the devitalized emulsion should be added to forty-seven and a half c.c. of autoclaved .85 per cent. saline, with the addition of 125 cm. of pure lysol. One cubic centimter of the diluted vaccine then contains five hundred million organisms.

When we wish to give an inoculation, the needle of our syringe is thrust through the rubber cap and the required amount withdrawn, leaving the remaining contents quite uncontaminated.

To take the index, in other words, to estimate a patient's resistance to his infecting organism, we require: 1, the patient's serum; 2, Normal serum; 3, washed corpuscles; 4, bacterial emulsion.

1. We take the patient's blood, for which we have special glass capsules made from tubing over the blow pipe. Bandage a finger firmly to produce a hyperæmia at the tip. Break curved end of the capsule; draw out the straight end over a pin point flame, break short, and with this prick the bandaged finger on its dorsal surface just above the nail, and receive the blood into the end by capillary attraction. Centrifugalize this and obtain the clear serum.

2. Similarly obtain the normal serum.

3. To obtain the washed corpuscles, put about 2 c.c. of a solution containing equal parts of .85 per cent. sodium chloride and 15 per cen. sodium citrate solutions into a small tube. Prick a bandaged finger, drop in ten to twelve drops of blood, shake gently and centrifugalize. We find the heavier red cells at the bottom, the "buffy coat" or blood cream composed chiefly of white cells overlying them, and the clear fluid above. Syphon off the supernatant fluid, refill with .85 per cent. saline and repeat the operation of mixing, centrifugalizing and syphoning, being very careful not to disturb the corpuscles. In centrifugalizing, it is important not to so prolong the operation as to compact the surface layer of white cells. The tube should then be placed in a slanting position in a sand tray.

4. To prepare the bacterial emulsion, put a small loopful from a culture of staphylococcus aureus in a watch glass containing .85 per cent. saline. Thoroughly mix by means of a short capillary pipet and rubber teat held at right angles to the watch glass, the clumps being broken up in the process of aspiration and expulsion. Finally, draw a quantity into pipet, remove teat, seal the capillary end and place in sand tray in line with the washed corpuscles and sera. In the case of the serum tubes the hooked end is broken off with a scissors or by a quick evulsion

with a knife blade thrust within the curve. We next require several capillary pipets of approximately the same calibre (also made from tubing) upon each of which a volume is marked with a blue pencil. Into one of these pipets, fitted with a rubber teat, a volume each of (*a*) the patient's serum, (*b*) washed corpuscles, and (*c*) emulsion, are drawn, a small bubble of air being admitted between the first and second volumes. Expel and thoroughly mix on a glass slide, reaspirate the whole into the body of the capillary tube, seal end in flame and pass quickly into the incubator at 37° C., noting the time.

Prepare a control tube employing the normal serum. When the period of incubation, fifteen minutes, had expired, the sealed end of the tube is broken, the contents expelled, thoroughly mixed and films drawn according to method described. The control tube is similarly treated. The films are then stained by Leischman's method, and, after locating the leucocytes with the low power, a count is made, with the oil immersion of the bacterial content of one hundred polymorpho-nuclear leucocytes in each film.

The following example of a count is self explanatory:—

Control.—100 leucocytes contain 800 cocci, *i.e.*, an average of 8 cocci per cell, equals normal, or 1.

Patient's serum.—100 leucocytes contain 600 cocci, or an average of 6 per cell—equals six-eighths of normal, or .75. Opsonic Index.

It has generally been found that the subjects of infection have a subnormal immunity index. The above example is drawn to illustrate this point. Following inoculation, if frequent examination of the blood could be carried out, there would generally be found a further depression in the opsonic curve (negative phase) followed after a variable period by a rise considerably above the normal (positive phase). If further inoculations are unnecessary, the opsonic curve tends gradually to approach the normal line, but where the desired immunity has been conferred, the reflow generally stops short, at or above the normal line. Wright has described this series of phenomena as the ebb, flow, reflow and high tide of immunity. Many variations, however, are met with in practice, which are sufficiently explained by the following terms:—Pregenative rise and prolonged negative phase. Occasionally, also, there would appear to be a suppression of the negative phase. Where inoculations are repeated, one looks in certain infections for a cumulative rise in the direction of a positive phase. If, however, inoculations are ill-timed, one may engraft a negative phase, upon a negative phase, a phenomenon which may account at all events for some of the unfavourable and even disastrous results which followed the earlier exhibition of tuberculin.

The technique in connection with the estimation of the opsonic index for tubercle bacilli, differs somewhat from that outlined above, owing to the cultural difficulties associated with the bacilli. Pharmacists have placed on the market a thick emulsion of devitalized tubercle bacilli from which a bacterial emulsion for index estimation is made by transfering a few loopsful to an agate mortar and thoroughly grinding in 1.5 per cent. saline, added drop by drop. This emulsion is then centrifugalized to dispose of the clumps and the opalescent supernatant fluid syphoned off and employed as the bacterial emulsion. Before proceeding with the operation further, it is advisable to stain a film from this emulsion by the ordinary Ziehl-Neilson method to test if clumps be present. Films prepared for tuberculo-opsonic counts are best fixed in Zenker's solution, stained with Carbol Fuchsin and decolorized in two per cent. sulphuric acid, employing an alkaline methylene blue as a counter stain. The formula for the latter is as follows:—Methylene blue, one gram; sodium bicarbonate, one gram; thoroughly grind, and add 400 c.c. water.

Method of Administering Vaccines.

Where practicable, it is desirable to work out the opsonic index of the patient to the particular organism involved, before administering the vaccine. Where, however, immediate treatment is indicated, a specimen of finger blood should be secured for index purposes at the time of the primary inoculation. Subsequent to inoculation, opsonic determinations should be made frequently in order to fix the dosage. If the negative phase is severe or prolonged, the quantity administered at future inoculations should be diminished. On the other hand, where the negative phase is lacking and the positive phase but slight, the dose should be increased.

Having once determined accurately the degree of reaction, future indices are not necessary, providing the same vaccine is used and progress is favourable.

Re-inoculations should be undertaken, usually, in the case of staphylococcus infections, every six to ten days. In the case of tuberculin, it is maintained by Wright, that it were better to make each inoculation a separate event, as, with few exceptions, a cumulative action in the direction of a positive phase can now be secured.

Owing to the different method of standardization in the case of tuberculin, the dosage has not been given in the above table. Assuming the case to be afebrile, the primary dose for adults should not exceed 1-1600 milligram, and for children 1-2500 to 1-3000 milligram. In no case should constitutional symptoms ensue, and it is much better

to err on the side of small dosage with an inadequate opsonic reaction, than to run the risk of inducing a hyper-susceptibility which might necessitate the discontinuance of the inoculations for a considerable period. Experience has shown that the maximum dose of 1-800 milligram is best borne by the subjects of renal and vesical tuberculosis, but in cases of tendon and joint infection, lupus vulgaris and localized afebrile pulmonary lesions, there is little or nothing to be gained by increasing the dosage above 1-1600 to 1-1000 milligram.

In diluting tuberculin, the following method is satisfactory. We obtain Koch's T. R. tuberculin in 1 c.c. containers, representing 10 milligrams of devitalized, dried and finely ground tubercle bacilli, and proceed as follows.

1. Immerse the container for ten minutes in pure lysol, wipe with a sterile towel, open, and decant into a standard vaccine bottle containing 39 c.c. of 0.85 per cent. saline solution, which has previously been autoclaved; rinse the container with 1 c.c. of fluid from the vaccine bottle; add to the whole 0.25 per cent. of pure lysol, or 100 milligrams. Adjust the rubber cap and seal as before described. 1 c.c. of this first dilution contains 0.25 milligram of tuberculin. This dilution is used as "stock."

2. After thoroughly shaking withdraw through the rubber cap by means of an accurately graduated syringe fitted with a hypodermic needle 1 c.c. of this "stock" dilution, and transfer it to a second vaccine bottle containing 49 c.c. of autoclaved saline solution, lyolize and seal as before. This solution constitutes "*Tuberculin No.* 1," 1 c.c., of which contains 1-200 milligram.

3. From this second dilution withdraw by the same means 10 c.c. and add it to 30 c.c. of autoclaved saline solution contained in a third vaccine bottle. Lysolize by adding 75 milligrams of pure lysol. This third dilution constitutes "*Tuberculin No.* 2," 1 c.c., of which contains 1-800 milligram of T. R. tuberculin.

For information as to culture media, period of incubation, etc., the following table will form a guide.

Organism.	Media.	Age of culture: hours.	Devitalizing temp. one hour at:—	Dosage in millions.
Staphylococcus	Plain agar	12 to 18	60° C.	100 to 500 m.
Streptococcus.	Plain agar	24	58° C.	10 to 20 m.
Pneumococcus	Serum	24	58° C.	50 to 100 m.
Bacillus coli communis	Plain agar	8	54° C.	50 to 100 m.
Bacillus pyocyaneus	Plain agar	12	54° C.	50 to 100 m.
Gonococcus	Hydrocele-agar	6	60° C.	10 to 20 m.
Meningococcus	Blood agar	18	60° C.	10 to 20 m.

With regard to autogenous vaccines they have been found of greatest importance in the treatment of acne indurata and coccogenous sycosis.

Stock vaccines may be used to advantage for primary inoculations in cases of furunculosis, impetigo and carbuncle, but for subsequent treatment, personal vaccines should be prepared if one looks for the best results.

The literature of this subject has now reached such proportions that I have taken the liberty of appending references to but a few papers of recent data, bearing upon the theory and practice of this form of theraphy.

1. Principles of Vaccine Therapy, by Wright, Jour. of American Med. Association. Vol. xlix, pages 479 and 567.
2. Anti-Typhoid Inoculation, Wright.
3. Surgery, Gynæcology and Obstetrics, Hollister and McArthur. Vol. No. 4, pages 375-435.
4. Bacterial Inoculation in the Treatment of Localized Infections, by von Eberts and Hill. American Jr. of Med. Sciences, 1907, cxxxiv, 35-36.

A NOTE UPON THE CLASSIFICATION OF TUMOURS.

BY

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It may be known to those here present that a few years ago I published a paper upon the classification of tumours based upon the embryogeny of the different tissues.* That classification, I confess, was somewhat elaborate in appearance, although simple in principle, based upon the fact that each primitive cell layer gives rise to tissues of two orders, to denote which I was compelled to introduce a new set of terms. I did not like to do this, nor was it my idea that these terms should in any way attempt to replace in general practice those honoured by long use. Nevertheless, mere length of use has brought about such vagueness in the employment of the latter that for scientific and exact purpose they have very largely lost their primitive value. These terms notwithstanding, it is some satisfaction to see that that classification is coming to be accepted by writers of systemic works on pathology as the most rational so far proposed. To-day I wish to call attention to what I regard as a further advance in our conception of the relationship of the different forms of tumour which permits us to make in some respects a still more exact classification.

It may be remembered that in my older classification I divided neoplasms into two great groups of the *teratomas*, (the tumours due to the

* Journal of Pathology and Bacteriology 4: 1902: 243.

A paper read before the Pathological Section of the Canadian Medical Association, Montreal, September, 1907.

development within the body of one individual, of tissues and parts belonging to another individual) and the *blastomas* (or tumours due to the aberrant growth in the organism of one individual of cells and tissues of that individual himself. So far as it went this division was fairly satisfactory: it left, however, a certain group of tumours in the debatable ground. I refer more particularly to that group which has been studied so ably by Wilms, the group to which he has given the name of "Mischgeschwülste," or mixed tumours, and to that section of the Mischgeschwülste to which the name *embryoma* has been applied. The type example of this growth is to be found in connexion with the kidneys of children and young individuals. Here there develops a cell-mass formed of a mixture of several distinct elements. There may be striated and plain muscle, gland tubules of renal type, cells of connective tissue type, of a sarcomatous type, and, very rarely, bone cells or cartilage cells have been encountered. Wilms has pointed out very clearly the mode of origin of these tumours. The anlage of the glandular cortical portion of the permanent kidney is of mesoblastic origin, and at a very early stage in the embryo this "nephrotome" is cut off or differentiated from the myotomies, or cell masses, lying on either side of the median line which will eventually give origin to the main musculature of the trunk axis and to the bone and cartilage of the vertebral column. Now, there have been cells at a yet earlier stage which have been the ancestors both of the future muscle cells and of the glandular portion of the kidney cells, and these ancestral cells have, by progressive multiplication, given origin to both. We can best comprehend the tumours in question by supposing that in the course of development, one or more of these ancestral cells has become snared off, or has come to occupy an unusual position with regard to its fellows, so that its development cannot follow the normal line. We may suppose that such a cell becomes carried along into the developing future kidney and that in time that cell begins to grow, and in growing retains the properties and the potentialities given to it at its origin. Such a "cell-rest," to apply Cohnheim's term, in its proliferation will tend, therefore, to produce *both* muscle cells and renal epithelium, and the tumour derived from it will of necessity be of a mixed type.

We encounter mixed tumours of a similar nature in several parts of the body—in the parotid, in connexion with the genital tract and so on—and it is along these lines that they gain their simplest explanation. Where are we to place these tumours? The cells that give origin to them have not the power, even under the most favourable circumstances, to reproduce all the different forms of tissue; they have

not the potentiality to form, even in the most favourable circumstances the complete individual. And, on the other hand, there are no signs in these tumours of a combination of tissues derived from all three germinal layers. There may, indeed, be only the representative of one layer, the mesoblast. But we have in this order of tumour two or more distinct forms of tissue, in addition to the connective tissue stroma. They are not teratomas, they are not typical blastomas.

It is here that the terminology introduced by the embryologist, Barfurth, in his "Handbuch der Embryologie," appears to me to be of singularly high value and to afford the basis of an adequate classification. Barfurth has pointed out that, following the development of the typical ovum, one recognizes a first stage in which each individual blastomere or product of the cell division of that ovum may be shaken apart from its fellows, as has been done by Driesch, Roux of Breslau, E. B. Wilson, Morgan, Jacques Loeb, and many others, and each cell so separated has the power of giving origin to a complete, even if somewhat dwarfed individual. Such cells he terms *totipotential.*

Following upon this stage he notices that as the cells of the dividing ovum develop into the different germinal layers these cells no longer possess the individual power of giving origin to the complete individual. But, obviously, in this next stage the individual cells of the primitive streak region in differentiating into epiblast, mesoblast, or hypoblast, according to their position become the ancestors not of a single tissue, but of various groups of tissues. If epiblastic in position they give origin to the cutaneous, glandular and nervous elements; even at an early stage they give off cells which become mesoblastic, and so originate members of the group of what we term familiarly the connective elements. Nor is this capacity to give origin to more than one form of tissues confined only to the familiar three layer period. The cells may be regarded as retaining this capacity throughout the whole of what Ballantyne has termed the germinal period of the embryo, until, that is, they become so far differentiated by division and relative site that they give origin to the matrices and anlagen of the different organs of the body. We have already given an example of this type of cell in what we said regarding the primitive cells of the myotomes. Such cells Barfurth terms *pluripotential.*

With progressive development, once the anlagen of the different tissues have been laid down the cells composing these become more and more differentiated, and now those cells have the capacity to produce one type of tissue only: they becoming *unipotential.*

Consideration will show that tumours group themselves into three great groups exactly corresponding to those three groups of cells laid down

by Barfurth. As regards tumours derived from the parasitic growth within the body of one individual, of the products of a separate ovum—twin teratomas—and "filial" teratomas derived from aberrant growth of cells of the germinal type, the products of the reproductive organs of the individual, the cells from which these tumours originate are most simply regarded as being totipotential. It is a far less simple conception to suppose that such tumours are derived from the segregation of a group of cells derived from all three primitive layers. That conception has now been wholly given up.

Similarly may we regard the whole group of mixed tumours of the Wilms type, the embryomas, as derived from pluripotential cells. If we speak of the first class as *teratomas* we may conveniently refer to these as *terato-blastomas,* to differentiate them from ordinary tumours formed of one specific type of constituent with a frame work or stroma of indifferent connective tissue and blood vessels. Such tumours we must regard as derived from unipotential cells. These we may continue to speak of as the *blastomas.*

This method of regarding tumours appears to me both simple and straightforward and helpful in dispersing the doubt and muddle that has existed regarding these transitional types and their relationship.

We may thus classify new growths as follows:—

I. *Teratomas.*—The products of the growth within one individual of what is primarily or potentially another individual.

(1) *Twin or germinal teratomas.*—Due to the growth within the tissues of the one individual (the host) of the products of another fertilized ovum, coæval with the ovum giving origin to the host.

Example: Fœtal inclusions.

(2) *Filial Teratomas.*—Due to the growth within the tissues of the one individual of the products of a *totipotential* cell derived from that individual.

a. Blastomeric Teratoma, due to the segregation of a (totipotential) blastomere in the early embryonic or "germinal" period (Ballantyne) and subsequent growth.

Examples: Three-layered epignathus and congenital sacral teratoma.

b. Germ-cell teratoma, due to independent, aberrant growth of a totipotential germ cell at any period after the germ cells, as such, become segregated from the somatic cells of the embryo, and before the nuclear reduction processes take place which lead to the production of oöcytes and spermatozoa.

Examples: Ovarian and testicular dermoids.

II. *Terato-blastomas.*—The products of growth of a segregated pluripotential cell of the individual.

Examples: Two-layered and simpler forms of epignathus and "congenital sacral teratoma"; also "Mischgeschwülste" (embryomas of Wilms) of kidney, parotid, etc.

III. *Blastomas.*—The products of growth of a segregated unipotential cell.

(1) *Teratogenous,* due to continued aberrant growth of unipotential cells of one individual (the embryo, or, rarely, of a teratoma) within the tissues of the other, (the parent).

Examples: Placental moles and chorio-epithelioma malignum. Carcinomas, etc., originating in ovarian dermoids.

(2) *Common,* derived from unipotential cells of the host.

Examples: The ordinary neoplasms formed of one type of tissue—fibroma, adenoma, etc., sarcoma, endothelioma, carcinoma, etc.

It is these blastomas that can be subdivided according to my previous classification into the *lepidic* or lining membrane tumours (lepidomas) and the *hylic* or matricial tumours (hylomas), whether of epiblastic, hypoblastic or mesoblastic (mesothelial and mesenchymatous) development.

IV. *Blastomatoid growths.*—There is yet a fourth class of new growths so-called, not coming into any of the above categories which remains to be noted. I refer to those conditions in which not individual unipotential cells of a tissue, but the whole tissue undergoes a local overgrowth, resulting in the formation of tumours that are, (1) ill defined, (2) tend to be diffuse or multiple, and (3) to retain in their structure the ordinary tissue relationships. These are the conditions of idiopathic "Riesenwuchs" of some authorities. They are commoner and more varied than, I think, is usually imagined. Examples of such conditions are:—Fibromatosis (multiple fibroids), lipomatosis, chondromatosis (multiple ecchondroses) and osteomatosis (multiple exostoses), myelomatosis (myeloma multiplex), gliomatosis, lymphomatosis (including lymphatic and myelogenous leukæmia), etc. Whether the termination "omatosis" should be applied to these conditions is debatable. It is that which, apart from this recognition of the distinction here drawn between these conditions and the blastomas proper, has hitherto been employed to designate the members of this class and this so generally

that to introduce another terminology seems a work of supererogation. Such growths form a link between the tumours proper and the hypertrophies.

THE LATER HISTORY OF CASES OF "SLEEPING SICKNESS."*

BY

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From the title of my paper, it would seem that an apology is due for attempting to speak on such an out-of-the-way disease; one that is, apparently, so foreign to the pathologcal conditions native to Canada. But the disease is of interest to Medical men, no matter in what part of the world they practise, since sleeping sickness or, better, human trypanosomiasis is one of the best studied of the diseases caused by protozoa. The pathological characteristics of this group of parasites have of late years received the greatest attention. Protozoa are already known to cause serious disease amongst animals and men in Canada and it is expected that further investigation will show that still other diseases are due to them.

Amongst the protozoan diseases of Canadian animals let us mention the hæmoglobinuria, Texas-fever or red-water in cattle, and the recently introduced dourine of horses; both of these are serious conditions.

In man, diseases with which all are familiar, and which are probably caused by protozoa, are the exanthemata and syphilis. Therefore, any facts concerning the nature of any protozoan disease, in so far as by analogy they may be capable of throwing light upon these important allied conditions, are of interest to us as Canadian practitioners.

Besides being caused by parasites belonging to the same division of biology, most of the protozoan diseases have clinically something in common. For example, all, or most of them, have more or less characteristic rashes. Like syphilis, human trypanosomiasis is character-

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* This paper was presented in the Section of Laboratory workers at the 1908 meeting of the Canadian Medical Association.

Our thanks are due to the Government of the Free State for instructing their agents to reply to our questions and for transmitting those replies to us.

We would also acknowledge similar assistance received from many of the Missionary Societies.

Where many have been so kind, it seems unnecessary to thank individuals in particular, yet our special indebtedness should be expressed to those mentioned below;—

Amongst the Missionary Societies,—Rev. Mr. Kenred Smith, Rev. Mr. Whitehead, Rev. Mr. Sutton Smith, Father Gabriel.

Amongst the Congo Free State Officials in Africa,—Monsieur l'Inspecteur d'Etat Mahieu, Dr. Pollèdro, Mr. C. Mallet, Dr. Grossule, Monsieur le directeur des prisons à Boma.

ized by an extraordinary faculty of remaining latent for years in an infected patient; after a healthy, sturdy middle-age, not infrequently old men may suffer the penalty of a luetic taint contracted in youth. In the same way, persons infected with trypanosomes may remain apparently healthy for many years, only to die of the disease finally. Many cases are on record in which individuals have died of "sleeping sickness" after an absence of from two to eight years from a locality where the disease might be contracted (1). On the other hand, it is worth remembering that there may be no such latent period and that all the symptoms of acute trypanosomiasis may appear after an incubation period so short as four weeks (2), or as in a case which was recently in Montreal, in as little as three weeks (3).

The course of the disease itself is extremely varied. It may be relatively acute and the patient may die within a few months from the known date of his infection. On the other hand, many persons known to be infected have continued to live for three or four years without treatment. The disease usually progresses steadily with increasing emaciation and weakness; occasionally periods of great improvement may occur which may last for several weeks or even months.

The disease is a difficult one to diagnose, since only in its later stages is an authoritative diagnosis possible without the demonstration of the parasite. This, unfortunately, is often extremely difficult because the trypanosomes may be absent from the blood for very long periods and the patient may often die of trypanosomiasis while the parasites are almost completely absent from the peripheral circulation. Recently, diagnosis has been made much easier through gland puncture. It was found that the trypanosomes could often be seen in the juice drawn from the enlarged lymphatic glands of cases of "sleeping sickness" at periods when the parasites could not be demonstrated by any other means (4), (5). It was also found that a general lymphatic enlargement was a very constant sign, prticularly of early cases of trypanosomiasis, and that this enlargement, unless some other cause for it were present, constituted an excellent reason for considering trypanosomes to be present (5). By this means of examination, it is possible to detect cases of trypanosomiasis at a very early period, and it was thought that by observing patients whose disease was thus diagnosed, it would be possible to determine the duration of the various stages of the disease; as might be surmised from what has been said concerning the difficulties of diagnosis, information is much wanted on this point. Our methods of procedure were as follows:—

As our Expedition went through the Congo Free State, cases of human trypanosomiasis, at all stages of the disease, were observed at the various

posts. Lists of these persons were left with the white men,—missionaries, doctors, clerks, or administrators in charge of the natives whom we had examined—with the request that the date and cause of their death should be observed and reported upon to us. Lists of negroes who had enlarged cervical glands were also given for the same purpose; it had been previously found that the posterior cervical group of glands, as a general rule, might be safely taken as an index of the general glandular enlargement of those negroes affected with trypanosomiasis in the Congo Free State (5).

Our Expedition left the Congo Free State in October, 1905. The last of the lists reporting upon the condition of the natives observed by us previous to that date have just been received. As was only to be expected, the reports are far from complete. Some of the white men have failed to take the necessary care and trouble to make their reports trustworthy, others have neglected to make any observations at all, and still others have failed to reply to our questions. In many instances the natives examined by us can no longer be found. This may be because Africans frequently change their name and leave their villages, or, in some instances, because natives object to speak concerning their dead. Hence it has been necessary to take considerable care lest mistakes in identity should arise. Doubtful cases have not been considered in compiling the communication which follows, and, on the whole, it may be taken as an accurate statement of the after history of the cases with which it is concerned.

In the Congo we adopted a method of classifying our cases which, while convenient clinically, does not rest upon a precise and accurate basis. It is as follows (6): *Type A*: Cases without any definite symptoms of illness, *Type B*: cases with a few symptoms; *Type C*: Cases with marked symptoms, the most noticeable being feebleness, extreme weakness, lassitude and fever. Type C is still further subdivided, according as sleeping is, (1) absent, or (2) present. This classification brings out the fact that sleep is a rare and comparatively unimportant symptom of the disease.

It must be strictly understood that there is no strong dividing line betwees any two of these groups since one division merges indefinitely into its neighbour; but it is none the less a practical, useful classification because the cases which will ordinarily be met with by medical officials engaged upon quarantine work, or by those treating the disease, will belong to one of these divisions. Patients placed in class C are usually recognized clinically. Many of those in class B will be suspected, while others, as well as the whole of class A, will only be de-

tected after the demonstration of the parasite. These last are by far the most important classes of patients, because it is largely through their movements about the country that the disease is spread (5). Fortunately, the great majority of such persons have enlarged glands and, through the application of systematic gland palpation of all natives, it will be possible to limit their movements to a great extent. Such cases are often strong and well, and indignantly refuse to believe that they are ill.

The determination of the length of time for which each class of patient may be expected to live is, therefore, evidently important in designing and instituting any system of quarantine and segregation intended to prevent the spread of "Sleeping Sickness." In considering our statement of the duration of the disease, it must be remembered that the majority of our patients were treated under comparatively bad conditions. They had no nursing and no invalid diet. If cases are well nursed and, perhaps, treated by some of the arsenical compounds, they will live for a very much longer time, even although they are taken under care at a late and hopeless stage of the disease. Patients in an advanced stage are much weakened, and are consequently extremly susseptible to secondary infections. In fact, in the majority of the fatal cases of trypanosomiasis, the immediate cause of death is a secondary bacterial infection of some sort (6). Eighteen of twenty-six well advanced cases of "Sleeping Sickness," in which sleep symptoms were present (Class C2), died within from one to four months from the time when they were first seen; a couple of cases, which were extremely well cared for, lived for a twelve-month, and one very exceptional case, for twenty-one months. Death was observed in two other cases in a little over one month after the commencement of sleep symtoms.

Eighteen natives belonging to Type C 1,—cases with well marked disease but no sleep symptoms, were followed; more than half of them died in between three and six months' time. One has lived for eighteen months without treatment.

Only eight cases belonging to Type B,—patients with slight symptoms, have been continuously observed. One of them died in less than nine months; the majority have died in about a year's time; one case in forty-one months.

One hundred and two natives belonging to the Class A,—those with no evident signs of disease, have been kept under observation. Of these, four died of intercurrent infections (pneumonia and pleurisy) in six months or less; thirteen died of sleeping sickness in from eleven to fourteen months, three others in forty months, forty-nine at intermediate periods. Thirty-six patients were still alive when they were

last heard of; twenty of these thirty-six patients had lived for over thirty months after their infection was first observed, and one for forty months.

It has already been stated that a general enlargement of the lymphatic glands was found to be a constant symptom of human trypanosomiasis. It has also been stated that, as a rule, the state of the posterior cervical groups might be taken as an indication of the degree of this general enlargement. From an examination of some six thousand natives in the Congo Free State, it was postulated that every negro should be suspected of trypanosomiasis who shows such an enlargement of the posterior cervical glands (5).

This observation has been supported by work done in Uganda(1), in Sierra Leone (7), in parts of the Congo (8) which were not visited by us, and recently by Dr. Allan Kinghorn (9) in Northern Rhodesia. Dr. Kinghorn palpated 9,005 natives living in an area where sleeping sickness is not endemic and from which cases are stated to be absent. He found five persons with + (see below) glands; of these, three were found to be infected with trypanosomes. There were thirty-six persons with + — glands. Both the 5 + and the 36 + — persons, 41 in all, would have been chosen, detained and sent to a medical officer for diagnosis, had a system of quarantine based upon gland palpation been enforced. That means that the three cases of trypanosomiasis which a highly trained medical man found amongst nine thousand negroes might also have been selected by an individual with no knowledge of medicine. The practical scope of such a method is evidently enormous. This rule is, of course, an extremely broad one, and naturally presents many fallacies, but it has the advantage that, through it, uneducated persons may detain a very large percentage of those infected with trypanosomiasis and direct them towards medical officers for certain diagnosis. It is only through the application of some such easy means of diagnosis that it will be possible to enforce quarantine measures with the object of preventing the spread of the disease.

From our experience we were able to make a rough classification (5) of the degrees of enlargement of the posterior cervical glands and to so grade them that "+," signified persons almost certainly infected with trypanosomes; "+ —," meant suspicious persons, and "+ — —," persons almost certainly not infected. It is understood in applying this classification, that other causes of enlarged glands must be absent and that the case must be in an early stage of trypanosomiasis, since a diminution of the enlargement of the glands occurs late in the disease. For an individual to be classed as "+," it was necessary that there should be in each posterior cervical triangle at least:

(*a*) one gland whose size was estimated at 1.5 x 0.75 cm.

(*b*) several (three or more) smaller glands, the largest measuring perhaps 1 x 0.5 cm.

Groups showing less enlargement than this, but more than + — —, were classed as + —.

As "+ — —," we classed groups containing—(*a*) only one or two glands measuring 0.5 x 0.25 cm., or (*b*) many tiny, usually hard and shot-like glands, which were only just palpable.

Since we had concluded from our observations that all persons with enlarged glands should be treated as cases of trypanosomiasis until the contrary was proved, it became extremely important to determine what proportion of the persons with enlarged glands, in whom trypanosomes had not been found, ultimately died of "Sleeping Sickness." Also, since there was no means of determining whether some persons might not be infected with trypanosomes, although distinct glandular enlargement was absent, it was important, in addition, to keep under observation, a certain number of natives who had no, or only a slight, glandular enlargement in order to determine whether sleeping sickness developed in any of them.

We found great difficulty in having all such persons observed. Only 45 of our + cases have been adequately watched. Of them sixteen died or had advanced sleeping sickness in from two to forty-one months after they were first seen; the majority of these died in about a year. Two other cases which were almost certainly infected are reported as having died in twelve and fifteen months of pneumonia. The remaining twenty-seven were alive and well at periods varying from twelve to forty months after they were first seen; thirteen of them at thirty-six months.

Thirty-three + — cases have been reported upon. Ten were dead or dying of sleeping sickness within thirty-four months; three of these were dead in about a year's time, and four more before the end of the second year. An additional case probably has sleeping sickness, and only twenty-two are still living and well at periods varying from twelve to forty months later; seventeen were well at thirty-three months.

Of sixteen + — — cases, one died of sleeping sickness nineteen months later; the remaining fifteen were well at periods varying from a year to forty months from the time at which they were observed.

From the facts recited in this paper, we reach the conclusions proposed below.

The average duration of a case of human tryanosomiasis after signs of sleep have commenced is from one to four months. Of those well advanced cases with definite symptoms but no signs of sleep (Class C 1),

the duration is from three to six months. The average duration of cases with indefinite symptoms (Class B) is twelve months, and of patients apparently healthy (Class A) eighteen to forty or more months.

About one-third (10) of the cases chosen by gland palpation and classified as "+" and "+ —" died of sleeping sickness within a a year; from an inspection of the small number of cases observed, it is clear that a much larger proportion of those persons who possessed much enlarged glands ultimately died of sleeping sickness than of those whose glands were only slightly enlarged. To some small degree the rapidity of death varied directly with the degree of glandular enlargement.

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A CASE OF PARTIAL AUDITORY AND VISUAL APHASIA WITH OBJECT-BLINDNESS DUE TO AN ABSCESS OF THE BRAIN.

BY

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The comparative rareness of such cases makes, I think, a further contribution on this subject of sufficient interest to report before this Association.

The patient, J. E. H., was seen by me on the 10th of October, 1906, in consultation with Dr. C. F. Martin. He was a right-handed man of

59 years of age, married, a locomotive engineer by profession. During the previous spring and summer he had had a great deal of business and family worry which seemed to affect his general health more or less; his appetite was poor and he was gloomy and depressed.

Three weeks previous he had a peritonsillar abscess on the left side of his throat and at the same time had two small abscesses in the floor of his mouth. These all burst in about a week or eight days and he felt much better. His appetite improved, etc., for two days; he then complained of headache and nausea, but did not vomit, and went to bed twelve days before coming under observation. The headache continued to be severe. His wife noticed then, that he could not always remember names of people or objects and when peoples' names were mentioned he seemed doubtful about who they were, although he could understand fairly well everything that was said to him.

Eight days ago in making out his monthly statement he could still read and write but could not understand figures and had to get a young man to do this part of the statement. The trouble with his speech, his wife stated, had been growing worse.

His personal and family history were of no importance. On examination, his temperature, pulse and respiration were normal; he had had no convulsions. He was found to be a very well developed man with no evidence of motor or sensory paralysis. The abdominal and epigastric reflexes were absent on the right side, present on the left. The plantar showed flexion response right and left; the other reflexes were normal. The absence or relative diminution of the abdominal and epigastric reflexes on one side is in my experience of great importance in diagnosis of slight impairment as from pressure on the pyramidal tract in some part of its course. This sign is often present, as in this case, before there is evidence of Babinski's plantar extensor response, which developed in this case just previous to death.

The cranial nerves showed a mild grade of optic neuritis more marked on the left side and right homonymous hemianopsia. There was a very evident difficulty in conjugate lateral deviation to the right, possibly due ot the hemianopsia. A watch was heard normally in the left ear, but was not heard on contact on the right side. Otherwise the cranial nerves were normal.

The patient was quite conscious and apparently of more than average intelligence although not highly educated. He understands most simple commands, turns over in bed when told to, squeezes one's hand readily, bends his arm, etc., but is apt to continue one movement when the command is changed to another, e.g., he continued to bend his arm when he

was told to straighten it. He opens his mouth when told to, but continues to open his mouth when told to close his eyes; more complicated commands are not comprehended perfectly.

Spontaneous speech is clear and quite correct until he comes to a name and these he cannot remember and it makes him worry. If the name is suggested he immediately recognises it and repeats it correctly; there is no agrammatism nor dysarthria. He can repeat words and short sentences. but cannot repeat long sentences.

There is absolute alexia and word blindness, *i.e.*, reading is impossible: he cannot even spell out the letters nor does it help him to trace the letters with his finger. He cannot read numbers: writing and copying are also impossible.

There is some object-blindness although he seemed to recognise his sons, that they were his sons; he could recognise but not call them by name; when shown a pencil he could not recognise it, but as soon as he had it in his hand, then he knew what it was for, but could not name it, although he said he had used it "often enough." He recognized the name immediately when it was suggested.

An abscess of the brain was diagnosed and on account of the partial word deafness, complete word-blindness and the hemianopsia, it was located between the angular gyrus and the posterior part of the first temporal convolution. Immediate operation was advised but unfortunately either the moving to the hospital or some other cause seemed to hasten events and he sank rapidly and died 24 hours after he was first seen. We were only allowed a very partial autopsy, merely a trephine opening in the skull.

The skull was trephined ¾ of an inch below the parietal eminence so as to expose the brain over the posterior extremity of the fissure of Sylvius. The meninges and surface of the brain were slightly congested, the convolutions flattened. On incision of the cortex we came immediately down on an abscess about one inch in diameter, circumscribed but with a definite wall, containing thick, greenish, inodorless pus. As near as we could make out the abscess cavity lay in the angular gyrus and the extreme posterior part of the first temporal convolution.

Apparently we had here primarily a condition of intra-cortical sensory aphasia, the optical aphasia of Freund where the patient, owing to the fibres connecting the auditory word centre in the posterior part of the first temporal convolution with the visual occipital cortex being interrupted, would not recall the names of objects, nor persons seen, nor recall the visual image associated with names of objects or persons. At the same time spoken and written language were not interfered with.

With the gradual growth of the abscess the optic radiation became involved causing homonymous hemianopsia, and then the angular gyrus with first the loss of power of recognising numbers and later complete alexia, then partial auditory aphasia was caused as the abscess touched on the posterior part of the temporal convolution. This case has many points of interest.

It calls attention to possible sequelæ of a very serious nature of the more or less ordinary peritonsillar abscess. The septic material evidently was carried directly up the carotid to the middle cerebral artery.

Secondly, it would tend to confirm Mills' idea that the centre for numbers is distinct from the centre for words and letters,—because, in making up his monthly statement in the beginning, when the cerebral symptoms first showed themselves, he could read and write but could not work with figures. Mills would place the memory for names in a centre by itself below the auditory word centre in the temporal lobe. Bastian and Ross, on the other hand, argue that, proper names being the last acquired property of language are lost first, if the functioning power of the auditory word centre be weakened or impaired in any way. Whether the amnesia verbalis at the outset of this case was due to the impaired function of the auditory word centre owing to the partial injury, or as appears more probable to me, due to the involvement of the commissural fibres between the auditory word centre and the occipital lobe, is impossible to decide. Certainly when under my observation he could not recognise common objects until he touched them, when he immediately knew them and what they were used for, but could not name them. He recognised the name when told, however, and repeated it clearly and accurately. This is to be accounted for by the fact that stimuli coming to the auditory word centre over the more commonly used path of the auditory nerve would be more effective on an impaired auditory centre than those coming to it from the stereognostic centres in the parietal lobe.

Agraphia is not always present when there is destruction of the angular gyrus and it is especially noticeable in educated people who are in the habit of writing, the centre being called into action directly by the auditory centre; afterwards the patient is unable to read what he has written. In the present case the man, a locomotive engineer, was not accustomed to write much and one can imagine that he had to form a mental image of the word before writing it down; that is, the stimulus starting in the auditory centre went first to the visual word centre and hence stimulated the writing centre. The destruction of the visual word centre in this way would cause agraphia.

THE

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

EDITED BY

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Remittances, advertisements or business communications are to be addressed to the Montreal Medical Journal Co., Box 273; all others to the Managing Editor, 216 Peel Street, Montreal. All communications intended for insertion in this Journal are received with the understanding that they are contributed exclusively to this Journal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript.

VOL. XXXVII. JULY, 1908. No. 7.

THE MEDICAL EXPERT.

There are few occasions on which the medical profession appears to less advantage than in certain legal battles when the importance of the issue or the social status of the belligerents results in a large number of so-called medical experts being called to give their testimony. In the first place, many medical men designated experts by the press are not experts; very often in the United States—our legal processes do not appear to admit so many complications as theirs—the array of talent does not embrace the names of men known to the profession at large; the best qualified to speak are frequently not the ones chosen, and the result is that A contradicts B, C contradicts D, and the case lies exactly as before, and the medical profession is often very properly ridiculed. This is most often the case where the question is one of mental responsibility or the contrary. Everyone who has practised medicine understands just how difficult it is in such a case to express an opinion and to support it by the evidence of science. In cases of insanity, too, the best evidence we can have in everyday life is the opinion of the experienced alienist; we do not press him for his reasons, because we know that his experience of past cases is his best reason, but in court, this is not allowed to have its proper weight. Each witness, too, endeavours to put the case in favour of the side that employs him; it cannot be otherwise, so long as human nature is human, and

this standpoint may be, and generally is adopted by the expert in all honesty. Why should not both sides be compelled to retain the same man or men? In such a case the medical expert would be swayed no more in one direction than the other, and he would be compelled to give an unbiased opinion. Some of the difficulties involved by such a measure are very apparent, but the fact that it has been done is strongly in its favour. Each side would have the privilege of refusing to share the services of any particular expert, but in every community there are men upon whom both sides could agree, provided that both sides wanted an honest opinion. If expert after expert were challenged by one side or the other, the power might well be vested in the court to compel both sides to agree upon some one. If this were not practicable, some cases would no doubt be compelled to do without medical expert evidence; and cases are known to us where, we think, the ends of justice would be all the better served.

In this connexion, we are glad to see that the Medical Society of the State of New York, appointed a committee to confer with another committee, similarly appointed by the Bar Association of New York, upon the subject of regulating medical expert testimony. Their recommendation provided that in civil cases, a list of qualified men should be drawn up, from whose number the court might appoint one or more to examine a case and report their opinion in writing. They recommended, also, the fee which should be paid for such services. Their opinion was, further, in favour of permitting the litigants to call whom they wished, as further evidence, at their own expense, but we venture to think that the jury would be likely to find useful the evidence of officially appointed experts. It is to be hoped that such measures as this will lead to a better state of affairs, one more in keeping with the dignity of the medical profession.

THE JOURNAL OF THE ASSOCIATION.

An association without some means of recording its transactions and expressing its convictions is largely ineffectual. The Canadian Medical Association is in such situation, but that need not last forever. At the Montreal meeting last year a committee was appointed to consider the whole matter and make report upon the feasibility of establishing a journal. The members of this committee are resident in various parts of Canada, from St. John to Vancouver, yet the chairman was able to discuss the matter personally with all the members but one. Several of the members who were quite willing to give an assent to the general proposal were not insensible to the difficulties which lie

in the way. At the meeting held in Ottawa in June, the members of the committee who were present, only two in number, reported that the establishment of a journal must depend upon the number of subscribers. If a fee of five dollars were exacted from all members irrespective of attendance upon the meetings, and three dollars set apart from each subscription for a journal, it was felt that the enterprise might be undertaken with good prospect of success; but this was upon the further assumption that the association would contain 1,200 to 1,500 members. The matter now rests with the finance committee, which is composed of Drs. Armstrong and Bell, of Montreal; Dr Powell, of Ottawa, and Dr. Fotheringham, of Toronto.

PROFESSOR E. A. SCHAFER.

There is a certain appropriateness, not to say old time piety, in the intercourse between the McGill Medical School and the University that was the *alma mater* of its founders, and the example that they kept before them. It is pleasant to see how of late years that intercourse has become more intimate. Dr. Gibson, the well-known Edinburgh authority upon the heart, is to give the opening address in the autumn; both the late Dean and the present Dean of the School have been recipients of honours from Edinburgh, and now McGill has returned the compliment and has conferred her LL.D. upon Dr. E. A. Schäfer, the distinguished, and, indeed, famous Professor of Physiology of the Northern metropolis, making him thus a companion of the equally distinguished Professor of Anatomy, now head of the University, Sir William Turner. It would have been difficult to choose a more worthy recipient. Not only is "Schäfer" a medical institution, as was remarked by one of those present at the dinner given in his honour, familiar to our students as household words through his "Histology," through the "Quain," of which he is chief editor, through the two volumes of his "Physiology," the foremost work upon that subject in our language, but at the same time he has, in the nine years in which he has occupied the Edinburgh chair, given to his department and to the University a lustre as an active centre for medical research (as distinct from medical and surgical practice), such as it has never before possessed. And he himself leads his pupils in active work. The memorable address delivered by Dr. Rolleston last September before the Montreal meeting of the Canadian Medical Association may well be said to have been based upon the observations of Schäfer and Oliver upon the properties of adrenal extract, observations which led to the isolation by Takamine, Abel, Aldrich, Fraenkel and others of adrenalin, or, as Schäfer rightly

and ethically prefers to term it, *Adrenin*.* The members of the Medico-Chirurgical Society were fortunate in hearing from Professor Schäfer the further outcome of this work of studies made by himself and his pupils upon the functions of the pituitary body, and of the discovery that this, small and insignificant as it seems, also affords an internal secretion or secretions, acting like "adrenin" upon the blood pressure and in addition having a profound diuretic effect, and, what is more, absolutely essential for the continued existence of the individual. What developments will proceed from these striking observations time alone can determine, but by analogy we are upon the threshold of advances of no little practical importance. Anatomist, histologist and physiologist, teacher, writer and investigator, it is given to few of the present generation to cut so wide a swath. McGill in honouring Professor Schäfer has yet more honoured herself.

* See his valuable Oliver-Sharpey lectures on the suprarenals, in the British Medical Journal, May 30th and June 6th of this year.

At a meeting of the governors of the Royal Victoria Hospital, the following appointments were made to the house staff for the year ending June 30th, 1909:—Admitting Officer, Dr. Scrimger; House Physicians, Drs. Logie, Landry, Murphy, Soley; House surgeons, Drs. Patterson, Quinn, Sinclair, Benvie, Chipman; House Gynæcologist, Dr. Burgess; House Ophthalmologist, Dr. Morin; House Otologist, Dr. Wright; House Anæsthetist, Dr. McGibbon; Externe in Medicine, Dr. Kaufmann; Externe in Pathology, Dr. Holman; Locum Tenens, Dr. Barry.

An Alumni Society has been organized in connexion with the Medical Faculty of McGill University. The following officers were unanimously elected:—Hon. President, Dr. F. J. Shepherd; President, Dr. R. Ruttan; Vice-presidents, Four to be appointed to represent districts; Secretary-treasurer, Dr. J. A. Scane; Committee—Dr. F. M. Elder, Dr. Grant Stewart, Dr. A. H. Gordon, Dr. Herbert Ross, Dr. Geo. Shanks, Dr. O. S. Waugh, Dr. R. E. Powell.

CANADIAN MEDICAL ASSOCIATION.

The 41st meeting of the Canadian Medical Association was held in Ottawa, from June 9th to 11th, inclusive. About 225 members of the Association were registered.

If we are correct in estimating the practising physicians in Canada at 6,000, the sick of the land were not seriously neglected on account of the meeting.

Article VII of the Constitution of the Canadian Medical Association,

adopted at last year's meeting, "provides that the Provincial Association in whose Province the Canadian meeting is held shall for that year withdraw its meeting, holding only an executive session at the same time and place as the meeting of the Canadian Medical Association."

For some reason unknown to us this compact was disregarded, and the largely attended Hamilton meeting just prior to the smaller Ottawa one was the result. This is not the best way to build up a National Association.

As first intimated this year's meeting was the first held after the adoption of the new, or "National" constitution, and fitly was held in the Federal capital and presided over by a Federal medical officer, Dr. Montizambert.

Dr. Montizambert was a marked success as a presiding officer, and his Presidential Address, dealing with Sanitation from the personal, civil, national and international standpoints, was a feature of the meeting. Being the Presidential Address meant that it should have a mixed medical and lay audience, and the President rose to the occasion and accomplished the feat of making an address evidently interesting and actually valuable.

For the professional part of the meeting, sections were provided—medicine, surgery, neurology, obstetrics, gynæcology, public health, laboratory workers, military medicine, eye, ear, nose and throat—each had its separate meetings.

In a larger association this is probably necessary, but in practice at the Ottawa meeting it did not work out to advantage. Some section meetings had a baker's dozen, and some a corporal's guard, while others were well attended.

The section in general medicine held its first meeting at 9.30 a.m. on Friday. The first paper, by Drs. Omar Wilson and J. H. Alfard, of Ottawa, was an account of some experimental work on the effect of the X-ray upon the generative glands of animals, and showed the appearance of atrophy and degenerations in sections from these organs in animals exposed during life to the X-ray.

Drs. V. E. Henderson and W. H. Cronyn, of Toronto, next presented a very complete pharmacological study of ergot.

The paper of Dr. C. S. MacVicar, of Toronto, on "Our Experience in Broncho-Pneumonia," was, in the writer's absence, read by the secretary.

Dr. G. S. Young, of Prescott, in "What shall we say to our Neurasthenic Patients," emphasized the value of common sense in dealing with such people.

In the afternoon Dr. Finley, of Montreal, in conjunction with Dr. P. G. White, reported results from the use of Flexner's serum in epidemic cerebro-spinal meningitis based upon cases from the Montreal General Hospital.

Dr. Graham Chambers, of Toronto, in a paper upon "The Diagnostic Value of Perversion of the Gastric Secretion," discussed a number of the common fallacies in gastric examinations.

Dr. James Baird, of Hemmingford, reported a number of cases of pernicuous anæmia. These papers all provoked considerable discussion. The section was unfortunate in having three other contributors fail to appear.

The section of mental and nervous diseases which met on Wednesday morning had a very full programme eleven papers in all, but of these the following only were presented; the authors of the others being absent, their contributions were taken as read:—"Insanity and the General Practitioner," Dr. T. H. Mohrer, Brockville; "Hydro-therapeutics, as applied to Mental and Nervous Diseases," Dr. A. T. Hobbs, Guelph; "Alcoholic Injections in Tic Doloreux," Dr. D. A. Shirres; "Partial Visual and Auditory Aphasia the result of Cerebral Abscess following Peritonsillar Abscess," Dr. C. K. Russel, Montreal; "A Study of Thomsen's Disease," by a sufferer from it.

The probability of the occurrence of myotonia congenita is slight in any case, of its occurrence in a physician extremely so, consequently the myotonic autobiography was a feature of considerable interest.

Thursday's medical proceedings were all centred above the diaphragm. Dr. W. F. Hamilton, of Montreal, read a paper upon "Some further Observation on Pneumothorax," in which the occurrence of the disease without discoverable tuberculosis was emphasized.

In a paper upon "Out-patient Clinics for the Tuberculous Poor," Dr. Harold Parsons, of Toronto, outlined the method in use at the Toronto General Hospital among this class of the population.

Dr. Parsons' paper and the discussion which followed constituted a very valuable portion of the medical section's programme.

Dr. J. K. M. Gordon, of Gravenhurst, reported some complications of tuberculosis, and Dr. J. H. Elliott, of Toronto, discussed hæmoptyses in pulmonary tuberculosis. Dr. Geo. D. Porter, of Toronto, read a paper on the choice of climate. Dr. Porter has a "genius for exposition," which immediately interested his audience in an often uninteresting subject.

The section on public health and the section of laboratory workers were rather poorly attended, and here, too, there was an unfortunate failure of contributors to appear, even at the eleventh hour.

The following papers were read:—"The National Importance of Pure Milk," Dr. C. J. O. Hastings, Toronto; "Anæsthesia in Laboratory Work," Dr. V. E. Henderson, Toronto; "Chorion Epithelioma of the Testis," Dr. C. B. Keenan, Montreal; "A Criticism of the Ammonium Nitromolybdate method of detecting organic Phosphorus in the Tissues," Dr. G. G. Nasmyth and E. Fidler, Toronto; "Septicæmia with Acute Fibrinopurulent Pericarditis and Hypopyon Iritis caused by the Meningococcus," Dr. C. W. Duval, Montreal; "The cultivation of the Meningococcus from Eye conditions complicating epidemic Cerebro-spinal Meningitis," Dr. Hanford McKee, Montreal.

The section of eye, ear, nose and throat held its meeting on Thursday morning and had an interesting session, while the quality of the work was well up to the average.

Dr. F. J. Tooke, of Montreal, showed a set of test lenses for estimating bi-focal vision, not hitherto made use of, and he also read a communication upon "The Advantage of the Capsule Forceps in Eye Surgery."

Dr. C. M. Stewart, of Ottawa, discussed Killian's submucous resection of the nasal septum.

Dr. N. C. Jones, of Toronto, outlined the treatment of acute suppurative otitis media emphasizing early puncture of the drum head.

In a paper on "Ethmoidal Empyema," Dr. H. D. Hamilton, of Montreal, referred to the presence of foreign bodies in the nose as a causal factor.

Dr. Hanford McKee, of Montreal, discussed the etiology and treatment of corneal ulcer with reference to the bacteriological findings.

Dr. G. H. Mathewson, of Montreal, reported recovery of an eye after the onset of sympathetic ophthalmia.

Dr. J. N. Roy, of Montreal, presented a rare condition in calcified fibroma of the orbit, and Prof. Reeve, of Toronto, in speaking of "Injuries to the Eye," counselled conservative operation before resorting to enucleation.

The section on gynæcology and obstetrics met on Wednesday morning with a fair attendance. "The Gonococcus as a factor in Infection following abortion or full term labour" was the subject of a paper, bacriological in character, by Dr. Fraser B. Gurd, of Montreal. Dr. Reddy, of Montreal, took up the question of the toxæmia of pregnancy from the clinical side, and discussed its diagnosis, its treatment and its prevention. Prof. J. C. Cameron, of Montreal, read an interesting paper upon pregnancy and heart disease, with reports of a considerable number of cases.

Cæsarean Section and Pubiotomy, respectively, were discussed by Drs. Webster, of Ottawa, and Farrell, of Halifax. Dr. David Patrick, of Montreal, reported a case of uterine inversion. Dr. Lapthorn Smith

read a paper entitled "Thoroughness in Abdominal Surgery." Dr. Lockhart's paper on "Chorio-epithelioma" was presented, but not read for lack of time.

The association was favoured with the presence of three distinguished visitors, Dr. J. S. Risien Russell, of London, who delivered the Address in Medicine; Dr. John C. Munro, of Boston, who gave the Address in Surgery, and Dr. John B. Deaver, of Philadelphia, who read a paper upon gall-stone disease.

The title of Dr. Risien Russell's address was, "The Value of the Reflexes in Diagnosis." Clear thinking, lucid expression, and a use of English, pure and undefiled, give to Dr. Russell's speaking a charm not common, and his subject, which in many hands might have become most complex, was by him made almost elementary in its simplicity.

Following Dr. Russell's address came that of Dr. Munro, on "The Surgical Rights of the Public." Dr. Munro has no hesitation in passing upon the general practitioner who poses as a surgeon. The physician who does not call in the surgeon, the etherizer who watches the surgeon, and the interne who substitutes for the surgeon all come under the *tribulum*.

Dr. Deaver's paper on gall-stone disease was a clear review of the subject by one well qualified by experience to review such a subject.

From the social side the meeting was a success and the local committee is to be congratulated upon the result of its efforts.

For the first day an electric car ride to the Golf Club House on Aylmer Road and a reception took part of the afternoon; in the evening following the President's Address, Mayor Scott and Sir Wilfrid Laurier welcomed the members to Ottawa, after which a civic reception was held in the Carnegie Library.

On Wednesday afternoon the Association and friends were the guests of the Canadian Pacific Railway at luncheon at Caledonia Springs, a special train leaving Ottawa at 12.45 p.m. and returning about six.

On Thursday morning the ladies of the Association were taken for an automobile ride with luncheon at the Golf Club, and in the evening the Ottawa members of the profession gave a smoking concert at the Russell House.

Reviews and Notices of Books.

ROTUNDA PRACTICAL MIDWIFERY. By E. HASTING TWEEDY, F.R.C.P.I., and G. T. WRENCH, M.D., Oxford Medical Publications.

This work, as indicated by its title, is an epitome of Midwifery as taught and practised at the Rotunda Hospital, Dublin, and is written by

the present master with the assistance of Dr. Wrench, Late Assistant Master.

In it are incorporated the teaching of the former masters, together with the personal and recent experience of the author in Rotunda Methods. The deductions as to the efficacy of these are drawn from statistics covering the last three years and comprising 5,630 internal and a larger amount of external cases.

The Rotunda Hospital has always been recognized throughout the medical world as a great school of Practical Midwifery; founded in 1745 it may well be the largest, the longest established and the most famous Maternity Hospital in the British Empire. There is hardly a country in the world that has not sent medical men to study at this school.

The scope of the book is designed to be *essentially practical*. It furnishes the student or practitioner with a guide to the diagnosis and treatment both of normal and of abnormal cases, the treatment being given in detail so that the methods of this school can be adopted and carried out by any medical man. As instances, we may refer to the treatment of *accidental haemorrhage* and of *eclampsia*. Again, the various operations of urgency which the medical man may be called upon to perform at a moment's notice, under the most adverse conditions, are fully described.

For the same reason no account of the anatomy of the pelvis, nor any embryology will be found in this book. A very short account of the mechanism of labour is included, restricted only to what is essential to know in order to understand the proper treatment.

The management of normal labour has been dealt with in the greatest detail, no part, however apparently trivial, being omitted, which may aid the practitioner in his endeavours to prevent a case becoming abnormal, or in recognizing the abnormality at the eorliest possible time when such exists.

Having in view its great importance the subject of *puerperal sepsis* in all its aspects receives special attention, from the point of view of its prevention and of the early recognition both of minor morbid conditions as well as the graver forms of infection. The authors are of opinion that in the vast majority of cases, puerperal infection has its beginning in some minor form, which, once recognized, can be promptly dealt with.

A full account is given of the early *care of the healthy infant* and of artificial feeding. The clinical differences between the healthy and the unhealthy infant are then dealt with—stress being laid on the prevention of ill health. The work concludes by a short account of the various early affections of infancy.

THE TREATMENT OF DISEASE; A Manual of Practical Medicine. By REYNOLD WEBB WILCOX, M.A., M.D., LL.D. Second Edition, revised, 932 pages. P. Blackiston's Son, & Co., Philadelphia.

At the outset we take decided exception to the title of this book, on account of the fact that the author does not direct the attention of the student in any special way to treatment. The whole trend of the book is expressed rather in the second title of the work,—A Manual of Practical Medicine. As such we have no fault to find with it, yet at the same time but little occasion to commend it, for of the making of such books there seems at present to be no end. However, written as the author claims, with the practical needs of the physcian always in view, and after twenty-five years teaching more than ten thousand medical graduates, the book contains the essentials in diagnosis and treatment, but it should not pass as a book on the treatment of disease. The subject matter of the book is comprised under twelve sections, beginning with the Infectious Diseases and closing with Parasitic Diseases. Needless to say, there are many subsections, as, for example, those found under Diseases of the Digestive System and Peritoneum, and those found under Diseases of the Respiratory System.

One notices in going through the book, short paragraphs upon unusual topics, as *e.g.*, Nasha Fever, Kala-Azar, Kubisagari, Purinæmia, Borisin, Atryplicism, Amok, or Amuck.

The book is well printed and possesses a good index.

TREATMENT OF INTERNAL DISEASES FOR PHYSICIANS AND STUDENTS. By DR. NORBERT ORTNER, of the University of Vienna. Edited by NATH. BOWDITCH POTTER, M.D. Translated by FRED. M. BARTLETT, M.D., from the Fourth German Edition, 658 pages. J. B. Lippincott Company, Philadelphia and London.

Ortner's book on Treatment comes somewhat as a surprise to many of us who know the writer at work, yet on reading its pages we suspect that we may have misjudged him, when we regarded him only from the standpoint of the fine diagnostician.

In the preface of the first edition the author states that he has "endeavoured especially: (1) to explain briefly but clearly the rationale and the technic of every variety of therapeutic measure useful at the bedside; (2) to give explicit directions in regard to the choice of mineral waters and baths suited to each individual condition, and (3) to furnish not merely lists of prescriptions, but, whenever possible, a brief account of the action of each drug, with the hope of making medication less an affair of the memory and more one of reason."

The first edition appeared in 1907, and the fourth, that from which this is translated, came out in September, 1906. In this, some new

matter was added, and from this edition some earlier suggestions not standing the test of time and Dr. Ortner's experience have been dropped.

As one turns through this edition the impression grows upon one that treatment of disease is becoming less medicinal and more mechanical, climatic, dietetic, hydro-therapeutic, and had Dr. Ortner discussed the treatment of diseases of the nervous system he would have of necessity emphasized the psycho-therapeutic methods now so frequently employed.

In the translation, which we must regard as faithfully done, the prescriptions have been altered to conform to the American Pharmacopœia—and references to climatology, hygiene and dietetics have been adapted to the needs of the American student and practitioner.

The work is taken up under sixteen sections, fourteen of which Dr. Ortner supplies. The appendix consists of two sections, one contributed by Prof. Frühwald on the Therapy of Acute Infectious Diseases, *e.g.*, scarlet fever, measles, etc., and the other on the Therapy of Neurasthenia is by the editor, Dr. Potter. This last section is included typographically, under infectious diseases.

The book is suggestive, helpful, possibly somewhat wordy in certain themes, but, on the whole, a very valuable addition to any practitioner's study.

W. F. H.

INDEX OF TREATMENT BY VARIOUS WRITERS. Edited by ROBERT HUTCHISON and STANSFIELD COLLIER; revised to conform with American usage by WARREN COLEMAN. Wm. Wood & Co., 1908.

This book is a very compact and most useful index to medical therapy and non-operative surgical treatment, "as well as such minor or emergency operations as any practitioner may be called on to perform." Among the seventy-odd contributors, one finds such names as Allbutt, Bradford, Bramwell, Gibson, Russell, Saundby and West. All have written their sections with great care and conciseness, and in a spirit of toleration and modernism that does them great credit. While most of the subjects receive but a dozen lines, pages are devoted to such important conditions as nephritis (West), retention of urine (Walker), rickets (Thomson), typhoid fever (Goodall). Warren Coleman of New York has prepared the American edition and has adapted the English prescriptions to the U. S. P. He also gives the agencies in America of the various English and German manufacturers of anti-toxic sera. Similarly in the article on epilepsy, American institutions for the care of epileptics have been substituted.

C. P. H.

THE SEXUAL QUESTION. By AUGUST FOREL, M.D., formerly Professor of Psychiatry, Zurich. English adaptation by C. F. MARSHALL, M.D., London. New York: The Rebman Company, 1123 Broadway.

This book comes perilously near being obscene. Publications which are quite as useful and much less offensive have been forbidden the use of the mails. Possibly there are persons who are compelled to read the book,—printers and proof-readers, who are paid by the week. The present reviewer is under no such obligation, and the opinion expressed is based upon the most cursory examination. It must be admitted that there are some fresh obscenities in the book which will interest a perverted mind. Much of the teaching is false and the references to religion are revolting. The comment upon "old bachelors" is particularly cruel. The book is a fine example of that form of exercise which is known as "writing for the fire." O, Science, what indeceneies are committed in thy name. The author was formerly Director of the Insane Asylum in Zurich. Possibly there are some of his patients who might be diverted by reading the book.

THE PRACTICAL MEDICINE SERIES. General Editor, GUSTAVUS P. HEAD, M.D. Vol. I., General Medicine, edited by FRANK BILLINGS, M.D., and J. H. SALISBURY, M.D.; Vol. II., General Surgery, edited by JOHN B. MURPHY, M.D. Series, 1908. Chicago: The Year Book Publishers, 40 Dearborn Street.

The present volumes are two of a series of ten issued at about monthly intervals, and covering the entire field of medicine and surgery. Each volume is complete for the year prior to its publication on the subject of which it treats. This series is published primarily for the general practitioner, at the same time the arrangement in several volumes enables those interested in special subjects to buy only the parts they desire. On many occasions we have called attention to the excellence of these volumes and desire to do so again.

THE PRINCIPLES AND PRACTICE OF HYDROTHERAPY. By SIMON BARUCH, M.D., New York. Third Edition, revised and enlarged, with numerous illustrations. New York: William Wood & Company, 1908. Price, $4.00 net.

The author of this book is the leading authority on the subject of which it deals. Owing largely to his teaching and practice, the employment of hydrotherapy has become a well recognized measure in the treatment of disease. In this volume the whole practice of hydrotherapy is set forth with the indications for its use and the various methods of its employment. The teaching of the book is sensible and free from vaga-

ries. The description of methods is clear and easily comprehended even by a physician without practical experience in the various applications of water.

THE COMMONER DISEASES OF THE EYE. By CASEY A. WOOD, M.D., and THOMAS A. WOODRUFF. Chicago: G. P. Engelhard & Company, 1907.

We have already reviewed this work in January last. It now appears from the hands of another publisher, Messrs. Engelhard & Company. There is really nothing new to add in addition to what we have already stated in regard to it.

J. W. S.

Medical News.

CONVOCATION IN MEDICINE.

The annual convocation for conferring degrees in medicine was held on June 12th. The award of prizes was made as follows:

FOURTH YEAR.

Holmes Gold Medal, for highest aggregate in all subjects forming the Medical Curriculum:—W. J. P. MacMillan, Clermont, P.E.I.

Final Prize, for highest aggregate in the Fourth Year subjects:—G. B. Murphy, B.A., Brockville, Ont.

Wood Gold Medal, for best examination in all the Clinical Branches:—F. C. Clarke, Coverley, Christ Church, Barbados, W.I.

Woodruff Gold Medal, for best examination in Ophthalmology and Oto-Laryngology:—J. S. Simpson, Maynard, Ont.

McGill Medical Society Senior Prize:—First Prize—J. Kaufmann, Montreal, Que.; Second Prize—A. H. MacCordick, North Gower, Ont.

THIRD YEAR.

Third Year Prizeman:—E. H. Funk, Rossland, B.C.

Sutherland Medallist:—C. M. Kelly, B.A., Springfield, N.B.

Hils Prize, for best examination in Pharmacology and Therapeutics:—A. Bramley-Moore, London, England; E. G. Worley, Haley's Station, Ont., equal.

SECOND YEAR.

Second Year Prizeman:—H. A. Campbell, Sherbrooke, Que.

Senior Anatomy Prize:—T. A. Robinson, St. Mary's Ont.; G. T. Wilson, Vancouver, B.C., equal.

FIRST YEAR.

First Year Prizeman:—D. S. Lewis, M.Sc., Montreal, Que.

Junior Anatomy Prize:—A. P. Davies, Hull, Que.

The Degree of M.D., C.M., was conferred upon the following undergraduates:—Arbuckle, J. W., Summerside, P.E.I.; Arton, O. A., Bailey's Bay, Bermuda, W.I.; Ballem, J. C., B.A., Mount Albion, P.E.I.; Barry, J. L., Morrisburg, Ont.; Bechtel, A. D., Victoria, B.C.; Bennett, S. J., Waterloo, Que.; Blanchet, S. F., Ottawa, Ont.; Campbell, D. G., B.A., Montreal, Que.; Campbell, J. de L., Arnprior, Ont.; Chipman, R. L., M.A., Kentville, N.S.; Clarke, F. C., Coverley, Christ Church, Barbados, W.I.; Davis, S., Montreal, Que.; Dewar, R. D., Glen Sandfield, Ont.; Dexter, R. B., B.A., Wolfville, N.S.; Donahoe, R. A., Cardigan Bridge, P.E.I.; Fenton, G. S., Ottawa, Ont.; Freedman, A., Lachine, Que.; Fyfe, A. M., Kingston, Jamaica, W.I.; Garcelon, H. W., A.B., Lewiston, Maine, U.S.A.; Gardiner, A. E., McAdam Junction, N.B.; Goodwin, B. E., Amherst, N.S.; Holbrook, C. E., Ogdensburg, N.Y., U.S.A.; Hunter, W. B., Vanceboro, Me., U.S.A.; Jenkins, W. M., Downeyville, N.B.; Kaufman, J., Montreal, Que.; Kelley, J. W Detroit, Mich., U.S.A.; Kennedy, A. H. N., McLeod, Alta.; Kirby, W. P. P., B.A., Gagetown, N.B.; Langsford, Wm., M.D., Oklahoma City, Okla.; Lees, F. W., Perth, Ont.; London, J. F., Wickham, N.B.; Lovering, J. E., Coldwater, Ont.; Lynch, J. G. B., Almonte, Ont.; MacArthur, C. O., Summerside, P.E.I.; MacCordick, A. H., North Gower, Ont.; Macdonell, D. F., B.A., Port Hood, N.S.; MacMillan, W. J. P., Clermont, P.E.I.; McDonald, J. N., Shelbourne, N.S.; McDonald, R. H., North Bedeque, P.E.I.; McGibbon, J. A., Forest, Ont.; McGrath, J. P., B.L., Tignish, P.E.I.; McKay, W. H., Ottawa, Ont.; Martin, A. A., Fingal, Ont.; Morin, J. H. G., B.A., St. Hyacinthe, Que.; Moses, H. C., Caledonia, Ont.; Murphy, G. B., B.A., Brockville, Ont.; Nagle, F. W., Montreal, Que.; Nordbye, F. A., Granite Falls, Minn., U.S.A.; Ortenberg, S., Quebec, Que.; Perrigard, E. N., Montreal, Que.; Powell, R. E., B.A., St. John, N.B.; Purdy, C. E., Bear River, N.S.; Read, G. C., B.A., Summerside, P.E.I.; Rocheleau, W. C., B.A., Woonsocket, R.I.; Ross, C. E., Westmount, Que.; Sawyer, C. D., Lewiston, Me., U.S.A.; Shanks, Geo., B.A., Howick, Que.; Shewan, D. R., Westmount, Que.; Simpson, J. S., Maynard, Ont.; Soley, L. A., Parrsboro, Ont.; Tanton, E. T., St. Eleanor's, P.E.I.; Thomas, F. H., Somerset, N.S.; Tracy, W. L., M.A., Hartland, N.B.; Wallace, C. T., Eureka, Cal.; Waugh, O. S., Westmount, Que.; Wilson, K. M., Madoc, Ont.; Wright, R. P., Montreal, Que.; Yeo, I. J., Charlottetown, P.E.I.

The Valedictory was given by Dr. Donald F. Macdonnell, B.A. (St. Francis Xavier).

The Address to the Granduates was read by Prof. T. A. Starkey,

M.B. and D.P.H. (Lond.), M.R.C.S. (Eng.), Fellow Royal Sanitary Institute.

The degree of LL.D. was conferred upon Dr. Edward Albert Schäfer, Professor of Physiology in the University of Edinburgh. Dr. Schäfer then delivered an address.

Dr. Roddick gave the sessional address, which was as follows:—

"The total number of students registered in the Faculty of Medicine for the session 1907-08 was 348, 12 of whom were dental students and 12 post-graduate students. This number was made up as follows: First Year, 64, (4 dental students;) Second Year, 104 (3 dental students); Third Year, 78, (1 dental student); Fourth Year, 90, (4 dental students). Graduates in attendance, 12; total, 348.

"Included in the first year are nine students who had registered in the double course for the degree of B.A., M.D., two years previous to the change in the Medical Curriculum to five years; it was therefore found necessary to provide for them a first year, under the old four-year regulation.

"As to the different provinces and countries from which our students have come: there were from Ontario, 74; Quebec, 75; New Brunswick, 28; Prince Edward Island, 30; United States, 45; West Indies, 20; Newfoundland, 4; Nova Scotia (including Cape Breton), 34; British Columbia, 22; Manitoba, 4; Northwest Territories, 6; England, 3; Scotland, 1; Ireland, 1; Yukon Territory, 1.

"Compared with other years this shows a falling off in numbers, due, in the main, to two causes, viz., the destruction of our building by fire in April of last year, and the establishment this session of the fifth year. The impression got abroad, especially in the West, that, owing to the fire, our facilities for teaching would be limited. Fortunately, that part of the building containing the chief laboratories was only partly destroyed, and was restored in time for the opening of the session in September last; so that while the work in some of the departments was hampered, it was in no case very seriously affected.

"I am pleased to be in a position to report that the plans have been accepted and ground has been broken for the new Faculty building, on the land kindly donated by Lord Strathcona; extending between University Street on the east, Carleton Road on the west, and Pine Avenue on the north. The architects promise that the new laboratory wing, containing the anatomical, pathological, and dental departments, and the administration building, with library, lecture theatres, etc., will be quite ready for occupation in September, 1909. Nothing will be left undone to make it one of the most complete medical buildings on this continent,—or, indeed, anywhere.

"Again, with the establishment this session of an additional year, we were quite prepared for a considerable decrease in our numbers. However, we have been agreeably surprised. To have had 64 first-year students is, under the circumstances, most gratifying. But the shock is now over, and as the other universities in Canada fall into line with the adoption of a five-year course, we may again reasonably expect our full share of students. There is every indication that the various licensing bodies in Canada will, in the very near future, exact a fifth year; so that we shall not have long to wait for the other teaching bodies to follow our example. The last year of the course will be devoted solely to clinical work; therefore, with the unrivaled hospital facilities in this city, we may reasonably expect that, instead of being a deterrent, this fifth year will prove an attraction."

"Two subjects have been added to the curriculum during the year, viz., those of the History of Medicine and Parasitology, under Professor Macphail and Associate Professor Todd respectively. The well-known literary attainments of the former fully justified his appointment, and Dr. Todd has been favourably known to the profession for some time, through his investigations and discoveries in connexion with the work of the Liverpool School of Tropical Medicine. They are both graduates of this university. Dr. Todd will be also attached to the staff of the Macdonald College.

"I have pleasure in reporting that three gentlemen received the Degree of Master of Dental Surgery, at the April convocation. These were the first graduates in dentistry. The dental department, established four years ago, has not attracted the number of students anticipated, the cause evidently being in the style of the degree offered. It was decided by a resolution of the faculty, passed a few days ago, to ask corporation to sanction the conferring of the degree of doctor, instead of master of dental surgery. It is thought that such a change will be the means of attracting students from a distance, and especially from the United States, when the degree of D.D.S. is universally conferred.

"It is interesting to know that the university is getting into closer touch all round with the militia service of Canada. In addition to the regular examinations of the faculty during the session, special examinations were held for the officers of the Permanent Army Medical Service Corps, for advancement from captain to major. Two candidates were examined in November last, both of whom passed. During the latter part of the session two other candidates presented themselves, taking special courses in the laboratory of hygiene, and passing the examin-

ations in that subject. I understand from the military authorities that in future all officers of the Army Corps seeking promotion will be sent to us for instruction and examination, chiefly because of our exceptional facilities for the teaching of hygiene under Professor Starkey. I might mention that several special courses were conducted in the department of hygiene, one candidate qualifying for the degree of Ph.D., another, a graduate of the Engineering Faculty.

"The recent death of Emeritus Professor Wright removed the last of the 'old guard' who were controlling the destinies of the Medical Faculty when I entered it as a student in 1864. To quote from the resolution of condolence passed by the faculty a few days ago: 'Dr. Wright was a man of wide culture and great knowledge, and could wield a facile pen in his earlier years, contributing largely to the literature of therapeutics. He held successively the posts of demonstrator of anatomy, professor of medical jurisprudence, and also the chair of materia medica and therapeutics for twenty-nine years. The latter chair was filled by him with much distinction. In his lectures he treated his subject with a thoroughness that greatly impressed his audience.' It might be further said of him that he possessed a remarkable memory and a most extensive vocabulary.

"Thanks to the untiring energy and inimitable tact of Dr. Macalister, president of the British Medical Council, medical reciprocity between the Province of Quebec and Great Britain is now an accomplished fact. This means much, especially to the profession in this province and to the students of medicine who are being educated here. It practically opens wide the empire to our young men, giving opportunities for actual practice, not only in the British Isles, but in the Indian medical services, the army and navy, the crown colonies, and the mercantile marine. Thus may the congestion here be relieved, and the fame of our universities extended. The president and members of the College of Physicians and Surgeons of this province are to be congratulated on the foremost place taken by them in the furtherance of this most important measure.

"My term of office expires to-day, but my interest in the success and welfare of the university and faculty will not diminish in the smallest degree. Indeed, as a member of the Board of Governors of the university, to which I have just had the honour of being appointed, I shall no doubt have opportunities of serving my former colleagues, which did not offer before. In my new position I shall strongly advocate, among other things, measures for the improvement of the social condition of the student. We have all along felt that he should be housed

more comfortably and safely, and that the cost of living should be lessened for him. It is notorious that Montreal is becoming one of the most expensive cities on this continent. Let us aim to make it one of the least expensive for our students. My predecessor, the late Dr. Craik, held strong views on this subject; but, unfortunately, he was laid low with a deadly malady soon after he had presented from this platform his scheme of reform. It shall be my endeavour to follow his lead and to urge on every possible occasion the adoption of measures for the increased comfort of those who entrust themselves so unreservedly to our care.

"I heartily congratulate the university on the appointment of Professor Shepherd as my successor, and would express the earnest wish that my friend, the new dean, may experience the same kindness and courtesy from his colleagues and the same measure of loyalty from the student body that I have so long enjoyed.

"Gentlemen graduates, keep your Alma Mater ever uppermost in your thoughts. There has, perhaps, never been a time in the history of this university when the sympathy and support of all of us were more needed than now. As a class you have already shown unusual evidences of affection for her. You will be long remembered for the part you have taken in the recent organization of the Alumni Association, which is intended to keep alive that university spirit so much to be desired. May all success follow your endeavours in this direction. Let your love for Old McGill never grow cold.

"Fare you well! Godspeed you on your way."

The section of the Canadian Medical Association on Military Medicine, which met on June 11th, at 9.30, carried out the following programme: (1) President's Address, Col. Ryerson; (2) Reports of Committe; (3) Election of Officers; (4) Papers—Lt.-Col. Jones, D.G.M.S., "On the advisability of forming a Canadian Ambulance and Red Cross Association"; Lt.-Col. Cameron, A.M.C., No. V. Field Ambulance, Lieut.-Col. Sponagle, A.M.C., "The Territorial Army Medical Corps, and the Canadian Medical Services—a comparison"; Captain G. M. Campbell, 1st C.A., "Some of the Difficulties met with in Camp Sanitation"; Lt.-Col. Maclaren, A.M.C., P.M.O., M.D. No. 8, "The Disposal of Excreta and Refuse in Camps"; Major L. Drum, P.A.M.C., "The present aspect of Military Sanitary Work"; Captain L. M. Murray, A.M.C., No. 1 Field Ambulance, "Ready and simple Tests in the Field for Water, Milk and the Detection of Diseases in animals"; Major Kilborne, P.A.M.C.

The following officers were elected for the ensuing year:—Hon. President, The Hon. Sir Frederick Borden, K.C.M.G., Minister of Militia; Hon. 1st Vice-President, Col. E. Fiset, D.S.O., G.G.H.S., Deputy Minister of Militia; Hon. 2nd Vice-President, Lt.-Col. G. E. Jones, G.G.H.S, Director Gen. of Medical Services; President, Lt.-Col. G. Sterling Ryerson, M.R.O., Toronto; Secretary and Treasurer, Lieut. T. H. Leggett, A.M.C., Ottawa; Assistant Secretary, Lieut. O'Hagan, P.A.M.C.;

In addition there were elected thirteen Vice-Presidents—one from each Military District.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF DRS. ARMSTRONG, BARLOW, ARCHIBALD, AND CAMPBELL.

EDWIN BEER, M.D. "The Phloridzin Test." *Jour. A. M. A.*, June 13th, 1908.

The article deals with special reference to the influence exerted by a diseased kidney on the excretory work of the second organ, and is limited to a consideration of the value of the phloridzin test as advocated by Casper and Richter, and modified by Kapsammer. Heretofore, the teaching has been that the subcutaneous injection of ten to 20 minims of a 1 per cent. solution of phloridzin is normally followed within half an hour by the excretion of sufficient glucose to give the well known reaction. The non-excretion of glucose is, therefore, taken as an indication of disturbance in the functional activity of the organ, and means some pathological lesion. If this test gave a negative result in both urines, operation was contraindicated on the grounds of renal insufficiency. It is now well known that disease of one kidney may very materially influence the other organ, as is evidenced by an increase in the functional activity of the well organ. But the reverse may occur, when we may have an inhibition of the functional activity of the sound kidney. In illustration of this latter effect, the writer cites seven cases in which the phloridzin was negative. Operative procedure was undertaken when a positive phloridzin test was obtained in five cases, two being fatal. The series contained two cases of renal tuberculosis (unilateral); one case of double renal tuberculosis with a unilateral nephroptosis in which a positive phloridzin reaction was obtained after nephorpexy; one of ureteral calculus; one of pyonephrosis; one of hydronephrolithiasis with carcinoma when continued hæmorrhage caused death. In all these cases Nature's test was much more reliable than

the phloridzin reaction. Indeed, according to this test, these cases should have shown symptoms of renal insufficiency, but not one did. The cases certainly show the fallacy of depending upon this one test alone, and emphasize the necessity of comparing the composite picture of each urine in order to obtain a reliable knowledge of the condition of each organ.

CLARENCE A. MCWILLIAMS, M.D. "Primary Carcinoma of the Vermiform Appendix." *Amer. Jour. Med. Sciences,* June, 1908.

The report is based upon a study of 105 collected cases, and deals with the subject in a very thorough and up-to-date manner. The chief points of interest may be stated briefly. The condition cannot be diagnosed clinically, but is generally associated with symptoms of appendicitis. Thus, 83 per cent. had symptoms of some variety of appendicitis; 36 per cent. were operated upon during or immediately after the first acute attack; 63 per cent. had symptoms of chronic appendicitis for varying periods of time. The age incidence is almost the same as for ordinary inflammatory appendicitis, *e.g.*, 60 per cent. occur before the age of thirty. It has been found to be more frequent in females than males in the proportion of 57 to 42 per cent., which is a complete reversal of frequency in the inflammatory type. From the figures alone, it would seem that concretions play but little part in the etiology of carcinoma of the appendix. The location of the growth in the great majority of cases reported was at or distal to the middle of the organ, corresponding to the region where strictures, obliterations of the tip, and chronic inflammatory lesions most often occur. Lymphatic involvement would appear to be exceedingly slow. Cœcal cancer in many instances has its origin in the appendix. In quite a number of cases no visible tumour was present in the organ, hence the uncertainty of a macroscopical diagnosis. The frequency of occurrence of primary cancer of the appendix may be conservatively placed at not lower than 0.4 per cent. A pathological classification of the growths gives 22 per cent. columnar-cell, 53 per cent. spheroidal, 9 per cent. transitional, 4 per cent. colloid. This corresponds to the occurrence of the two first varieties in the stomach, while in the intestine alone the columnar type occurs in about 72 per cent. The average age for the spheroidal tumours was twenty-three, for the columnar forty-three, a difference in the age incidence of twenty years. These tumours show a tendency to progressively infiltrate contiguous tissues, but distant metastases are uncommon. The invading mass is of slow growth, the new growths being allied rather to the rodent ulcer type in contradistinction to malignant growth of the alimentary tract generally. Any circumscribed tumour in an

appendix should arouse suspicions of cancer, and the meso-appendix should be widely excised, and glands looked for and removed. The removal of the entire meso-appendix, whenever possible, and the microscopic examination of the appendix is advocated in all cases of appendectomy.

W. L. B.

RETROSPECT OF DISEASES OF CHILDREN.

SCHEUER. "Acquired and Congenital Defect of the Kidney." *Zeit. f. Heilk.*, Bd. 28, H. 4.

Leo Scheuer reports in *Zeitschr. f. Heilk.*, Bd. 28, H. 4, some cases from the autopsy room of a children's hospital. In children dying of other diseases (number of total autopsies not given) he found, during routine examination, absence of one kidney in five cases. Whether such absence is due to non-production of the organ or to rudimentary condition can be determined, he claims, only by microscopical examination. For instance, in two of his cases the microscope revealed definite renal structure. In the remaining three no trace of kidney could be found. True congenital defect is generally accompanied by other defects in neighbouring organs, *e.g.*, double uterus, imperforate anus or urethra. The bearing on surgery is obvious.

PACKARD. "Aspirin as a Cause of Nephritis." *Arch. of Pediatics* (N. Y.), April, 1908.

Maurice Packard presents a case of hæmorrhagic nephritis apparently associated with the exhibition of aspirin.

A child, four and a half years old, whose entire history was irrelevant, complained of sore throat and chilly sensations. T. 103°, P. 124, R. 28. Urine normal. Throat extremely injected, no membrane. Diagnosis: rheumatic tonsillitis. Aspirin gr. v every four hours was ordered, with ice spray as a local measure.

After two doses (10 grains) the fever subsided and the throat was better, but the child appeared worse. He was sleepy and œdema was present in the face and over the shins. The urine was scanty and of a uniformly bloody colour; microscopical examination revealed numerous blood casts, fragmented red blood cells, renal cells and leukocytes disproportionate to the blood percentage. The aspirin was at once stopped and the patient given several hot baths, when improvement quickly occurred, the urine becoming normal in a week's time. Finally, in order to demonstrate, if possible, the causative relation of the drug it was again given (5 gr.), when albumen, blood casts, epithelium promptly

reappeared. Six months later the urine was normal and the patient well. The author knows of no similar case.

JELSKY. "Acute Hæmorrhagic Nephritis following Mumps." *Archiv. f. Kinderheilkunde*, 1908, XLVIII.

Jelsky observed nephritis in a fatal case of mumps occurring in a child of seven months. The case was the fourth of a series in one family and was typical. On the tenth day recovery seemed complete and the child was allowed to go about on the street. Two days later, however, swelling of the same parotid occurred, with a rise in temperature to 104° F., while the diapers showed a red stain, due to bloody urine, and examination of the latter revealed albumen, blood, and blood casts. With swelling of the submaxillary gland and uræmic symptoms the child died.

Bacteriological examination was indefinite. Of the other three members of the family affected, the first had a light attack, the second was seriously ill, and the third still more so.

HEUBNER. "Autopsy in a Case of Orthostatic Albuminuria." *Berl. Klin. Woch.*, LIV. 1, 1907.

Postural albuminuria has long been recognized as a distinct type apart from other albuminurias of obscure origin. Recent work of Edel, and of Erlanger and Hooker (Johns Hopkins University), has demonstrated a definite relation to variations in blood-pressure, strongly suggesting that the condition depends on circulatory derangements and not on renal disease. Reliable observers, however, have been skeptical and refuse to believe that a normal kidney can secrete large amounts of albumen during a long period of time. Opportunity for histological study has rarely or never occurred. Such an exceptional chance has come to Heubner (*Berl. Klin. Woch.*, 1907, LIV., 1; *Amer. Journ. Med. Sci.*, May, 1907). A girl aged ten years was admitted for chlorosis and œdema. In routine examination he found albuminuria which was accidentally proved to be a very typical case of the orthostatic variety.

This was treated by the horizontal position in bed for several months. At varying intervals she was later kept under observation for over two years, in the last year and a half of which she showed a typical postural albuminuria. At twelve years of age she was re-admitted with definite signs of brain tumour from which she died.

At autopsy the kidneys were examined microscopically, with particular care. Beyond slight cortical congestion and other insignificant (Orth) changes, due in all probability to the prolonged confinement in

bed, the kidneys showed no lesion which could account for the albuminuria—they were, indeed, normal; there being no parenchymatous change.

It is proven then that large amounts of albumin may be secreted through long periods of time (a year or more) by perfectly normal kidneys.

F. M. F.

THE GERMAN SURGICAL CONGRESS.

The Annual Congress of the German Surgical Society was held as usual in the Langenbeckhaus, April 21st to 24th, and—as usual, too—gave ample evidence of Teutonic industry and intellect. The official "Selbstberichte" of the Centralblatt have not yet appeared, but the *Deutsche Medizinische Wochenschrift* publishes a very good abstract of the proceedings, part of which is worth while reproducing.

One of the newest and most daring proposals comes from one of the older surgeons, Trendelenburg. Briefly, it consists in the removal of the post-operative pulmonary embolus by operation. Trendelenburg worked out the procedure and its physiological aspects on animals. Fore-conditions naturally are, certainty of diagnosis and sufficient time for the operation. The diagnosis rests upon the well known symptoms of sudden collapse, pallor, lividity of the lips, loss of the pulse, together with deep and distressed respiration. Looking over his own cases he found that, of nine, only two caused immediate death, while in the others, there elapsed from the moment of collapse to death an interval of from ten to sixty minutes. As to the technique: The pulmonary, lying in the second left intercostal space, is covered by the pericardium, and behind it lies the superior vena cava. Experimentally, he established the fact that the pulmonary artery can be completely compressed at the longest for forty-five seconds; beyond this death occurs. Partial compression is possible for several minutes. The superior vena cava may be compressed with impunity for some time. The operation consists briefly in removal of the ribs, from the 1st to the 3rd; vertical incision of the pleura; incision into the pericardium at the level of the 3rd rib. The vessels here lie a little underneath the sternum; they are pulled forward and a rubber tube passed behind the aorta and pulmonary and afterwards drawn upon. From this moment the operation must be extremely rapid. Incise the pulmonary artery, pull out the embolus with a pair of forceps, and immediately close the incision in the arterial wall with clamps. All this must be done inside three-quarters of a minute. The compression is then removed, and there follows at leisure the suture of the artery and of the soft parts. This procedure worked out on animals was tried in the human once without

success. In a living calf, into whose jugular a piece of lung had been introduced, causing embolic symptoms, the artificial embolus was successfully removed from the pulmonary artery by this method.

Kümmell of Hamburg declared himself a warm supporter of the late practice of gynæcologists in letting their patients up within a day or two after laparotomy; and reports 164 cases with excellent results. This did not pass without opposition. Abel, of Berlin, and Henle, of Dortmund, remarked that they had had unfortunate results in some cases.

Kocher returns to the question of thyroid transplantation in cases of Graves' disease. He recommends its insertion into the medulla of bones, instead of into the spleen, as being a less formidable operation; the results, he says, are equally good.

Payr, of Greifswald, gave the late history of a child suffering from myxœdema and cretinism in whom he had transplanted twenty-eight months previously the thyroid into the spleen; early improvement had not held good, and the ultimate result left a great deal to be desired.

Lexer, of Königsberg, reports a large number of bone transplantations. Formerly he used boiled and macerated bone, and transplanted it underneath the periosteum. This was successful in small defects but not in the larger ones; the bone was usually extruded by suppuration. Lately he has been using the abundant amputation material of his clinic for transplantations; and this absolutely fresh material in which the periosteum is included with the bone has uniformly healed in. The transplanted bone marrow causes fever and inflammatory reaction by its destruction; so that he now clears this out and fills with an iodoform filling, which is later gradually reabsorbed. Of the large variety of his operations for the filling in of various bone defects we may note as especially interesting one case in which the whole upper third of one tibia, together with its articular surface, had to be resected on account of sarcoma. A corresponding piece of bone from an amputated limb, including the joint cartilage, was transplanted fresh, healed in, and relatively good joint function was retained. The same success was obtained in resection of the upper end of the humerus. Finally, in a case of bony ankylosis of the knee he substituted after resection a whole fresh knee joint with cartilages and crucial ligaments entire, measuring 1 to 1½ cm. on either side of the joint surface. The operation was performed seven months previously, but movement was up to the time of reporting slight, and whether good movement could ever be obtained was doubtful.

Bier reports a new method of inducing local anæsthesia in limbs. After expression of the blood by the Esmarch bandage from the toes up, the

limb is tied off about four fingers' breadth above and below the middle joint with a soft bandage; then (in the arm) the median vein is exposed, its blood further expressed, and 100 cc. of a ¼ per cent. solution of novocain injected. Anæsthesia is immediate and suffices for the resection of the joint. After the operation the whole limb below the upper bandage is absolutely analgetic, although not always anæsthetic. In the leg the saphenous vein is chosen, and for resection 150 cc. of novocain solution are injected. Amputations and sequestrotomies are also quite possible.

For fear of intoxication the blood must be allowed into the limb only gradually; first, the lower bandage is removed; then the upper is gradually loosened until bleeding begins, then tightened while the wound is sutured. The anæsthesia disappears within a few moments after removing the upper bandage.

Hochenegg, of Vienna, demonstrated a cured case of pituitary tumour. The patient was the subject of acromegaly; the tumour was removed by the nasal route with a temporary resection of the frontal sinus. After chiselling through the body of the sphenoid he was able to scoop out the hypophysis, enlarged to about three times its normal size. Three weeks after operation there was great improvement in the headache, which eventually disappeared; vision was improved; and the acromegalic phenomena were beginning to disappear. As early as the tenth day after operation it was observed that the hands were smaller and the fist could be closed. Upon discharge of the patient it was found that his boots had become much too large, so much so that he had to put on three pairs of stockings.

Borchardt, of Berlin, demonstrated two cases of cerebello-pontine angle tumours, in which the tumour had been successfully removed. Up to the present he has operated on seven of these cases, four of which have been successful.

Küttner, of Breslau, reports eighteen intrathoracic operations, nine times by Sauerbruch's method of plus pressure and nine times by Brauer's method of minus pressure. The majority were tumours of the chest wall. There were also such cases as gunshot wounds of the lung, bronchiectasis, lung fistula, and two primary lung cancers, with one carcinoma of the œsophagus in the thoracic portion. Küttner believes the method is a decided step in advance. Physiologically both methods are of equal value, but he considers the method of plus pressure more convenient and pleasant for the operator.

Graff, of Bonn, demonstrated a case of *pseudo-leukæmia infantum* cured by extirpation of the spleen. The child at operation was fifteen

months old, in very poor condition; there was slight leucocytosis, the red corpuscles were down to 1,800,000, and hæmoglobin to 45 per cent. The extirpated spleen weighed over a pound. Success was brilliant; in nine months the body-weight had doubled itself. Wolff showed a similar case operated on two years previously. This child also was in perfect condition.

E. A.

MEDICINE.

UNDER THE CHARGE OF DRS. FINLEY, LAFLEUR, HAMILTON, AND HOWARD.

M. Adler. "The Question of the White and Dark Meats as Food." (Zur Frage uber den Gehalten extractive Stoffen des dunklen und weissen Fleisches). *Berl. K. Wochen.*, No. 8, 1908.

Since the work of Offer and Rosenquist, published in 1899, it has been considered as correct that there existed little if any difference between the effects of the white and dark meats when given in the nourishment of patients.

For many years scientific consideration has been given to the meat bases—fleischbasen—and especially so since the writings of Hofmann in 1869, who found in severe cases of nephritis a great diminution in the kreatin in excretion, has the view been held that meat food in general, and especially the meat extracts should be forbidden in order to prevent an accentuation of them in the system with an overloading of the blood with kreatinin.

This question gained significance when a knowledge of the uric acid synthesis in the body was acquired and its source discovered in the change undergone by nuclein and the Xanthin bodies.

A study of the metabolism of nucleins shows that by destruction of the elements of the cell an equivalent quantity of purin body is formed, which one calls endogenous purin: by "exogenous purin" one understands that purin body formed out of the nuclein containing substance in the food . Either or both these bodies require to be considered or reckoned with—as well these as those precipitated by oxidation, the oxypurin bodies, hypoxanthin xanthin—and as quickly and as thoroughly as possible to be eliminated.

The idea that by retention of any waste products the organism suffers, and of the organs of excretion the kidney in particular, must be admitted, and Gaucher was the first in 1886 to demonstrate by experiment the pathological influence or effects upon the kidney brought about by hypoxanthin injections.

In 1903 J. Walker Hall came to the same conclusion regarding these pathological changes in experiments upon animals with injections of hypoxanthin and guanin, finding in both the liver and kidneys, especially in the kidneys, signs of degeneration in the cells of the tubule. As a result of this, the conclusion followed that the constant presence of purin bodies in all nitrogenous food made it possible for an accumulation or heaping up in the system, and especially in those cases where already the kidney was diseased. Senator advised, along with others, such meats as were poor in extractive substances, such as veal, lamb, young pig and young birds—and most fish—for the food of those with renal disease—and often, too, such meat after the soup and extractives were taken away, and finally only the white meats.

Then in 1896 Van Noorden concluded this question could be settled only on the basis of a quantitative analysis of the food materials in question.

Then in 1899, as we have said, Offer and Rosenquist concluded on their examination that the content (Gehalt) of white meat and dark meat in nitrogenous containing extractive substances as well as in purin bodies showed so small a difference that one could no longer see any cause for considering them different, and, indeed, especially in kidney and gouty patients they stood of equal value, or equally contra-indicated.

The author, considering the foregoing teaching in this matter, set about to find whether or not some explanation could not be found in the mode of preparing the meat, inasmuch as it appeared from the statements made that all the conclusions contrary to the accepted theory and practice had been based on examinations made of *raw meat*. Adler describes his experiments in detail and gives the results in percentages.

He shows (1) that there is a quantitative difference in the purin bodies found in the meat of bullocks and cows when prepared for food which justifies a separation into the dark and white meats; (2) that boiling of white meat favours the withdrawal of these nitrogenous bodies and extractives more than roasting; (3) that this observation supports the practice which may have been empirical, or at all events regarded as such that white meats are better than dark meats in the food of certain patients.

DISINFECTION OF ROOMS, ETC., BY AUTANE.

One of the great objections to disinfection of rooms by formaldehyde vapour, according to Flügge's method, is that a special apparatus is necessary, and in spite of efforts to simplify the technique, it still remains rather complicated. Last year Eichengrünn made known in the *Ztsch. f. angen. Chem.*, a new product, to which he gave the name of "Autane," consisting of a mixture of peroxide of barium and strontium, with paraformol or trioxymethylene. This mixture, inert in the dry state, gives off in the presence of water, vapour of formaldehyde and water vapour. At ordinary temperatures a relatively small quantity of water gives a slow and continued disengagement of formaldehyde vapour. If tepid wated is used the vapour is disengaged much more rapidly, and is diffused at once in the atmosphere. It is a catalytic action, the alkaline peroxide in the nascent state depolymerizing the trioxymethylene into formaldehyde, which in part dissolves, and in part is disengaged in the gaseous state. The efficiency of this substance as a disinfectant has been favourably reported on by several workers, including Wesenburg, Selter, Nieter, and Tomarkin and Heller. Fornario (*Rev. d'hyg.*, Paris, XXX, 1) gives the results obtained in some experiments made by him in the Pasteur Institute, Lille. He conducted his experiments in an apartment of 60 cubic metres (over 2,000 cubic feet), which was not air-tight. He used for this room 2,400 grms. of autane powder and about 2,300 cc. of water from 20° to 25° C., in order to assure the slow development of the vapour, the process of disinfection taking seven hours. Previous observers, with the exception of Nieter, consider that complete and careful shutting up of the chinks, windows, doors, key-holes, etc., is unnecessary, but Fornario found that disinfection was much more complete when the apartment was practically hermetically closed. He also differs from them in this, that whereas they attribute to the gas generated from autane a considerable power of penetration, his experiments show that it does not penetrate, well, *i.e.*, that it is a good surface disinfectant only. The ease with which it can be employed, without special apparatus, renders its use convenient for the rapid disinfection of small apartments, conveyances, railway carriages, consulting rooms, etc. *The Edinburgh Medical Journal*, May, 1908.