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## Original Communications.

### THE PHYSICIAN AND HYGIENE.
#### INTRODUCTORY ADDRESS AT THE OPENING OF THE MEDICAL FACULTY, McGILL UNIVERSITY.

BY

E. P. LACHAPELLE, M.D.

Chevalier of the Legion of Honour, President of the College of Physicians and Surgeons of the Province of Quebec, President of the Provincial Board of Health, Professor of Hygiene in the Faculty of Medicine of Laval University.

Mr. Dean and Professors, Gentlemen Students :

The Medical Faculty of McGill, in extending to me the invitation of addressing you to-day, has conferred upon me, a great honour, for which I desire to tender my most cordial thanks; it was, no doubt, the intention also of this faculty to give Laval University, to which I belong, a token of friendship and esteem, and this, above all, calls for the expression of my gratitude. Consequently, I could not decline the kind invitation, though the lack of facility with which I express myself in English, strongly prompted me to do so. However, I prefer to sacrifice my reputation as a linguist for the pleasure of accepting this invitation, feeling confident from the outset, that I may rely upon your greatest indulgence. I trust that you will overlook any errors of language and take into consideration my good will only.

The profession, gentlemen, which you intend to embrace, is one of the most elevated. Composed of study, work and devotedness, the physician's career is not devoid of grandeur and nobleness, since his aim in the practice of his profession is both lofty and humane. the solacing of suffering humanity. His place of predilection is at the bedside of the sick; day after day, the wounded and the afflicted throng into his office; his best friends are the feeble and the forsaken.

In him, both science and kindness co-operate to enable him to dress

and heal the wounded, to prolong life; and the happiest moments of his existence, his hours of triumph, are the victories won at death's door. Yes, a physician's life is really noble and great !

It is here, in this grand university, that you have flocked to prepare yourselves, by lengthy and patient studies, for the career you will be called upon to enter in the near future, that state of life made up of work and self-denial.

Your professors will direct you in the right path ; they will teach you the precepts you must know ; they will unfold the vast extent of medical science, the more entrancing, the more we fathom it. No doubt you will love the science of medicine, which makes the delight of its faithful followers, and which will open up to you the fields of the unknown. You will study it passionately, in all its branches, thus learning to acquaint yourselves with life and to combat the causes of death.

Of all the branches of medicine, there is one upon which I would like to dwell more particularly to-day, for it will be of constant use throughout your medical career ; I am alluding to hygiene. I will endeavour to demonstrate that without hygiene, a physician is unable to fulfill his mission towards society. Hygiene has become a positive science, giving accurate and constant results. This, to a great extent, has been brought about by the progress and achievements of Pasteurian medicine. Hence, the great help it affords the physician in his endeavours to prolong the life of his patients, either by restoring health, when impaired, or still better, preventing disease from endangering it.

Consider for a moment hygiene and the wide field it covers. By alimentation, calisthenics and work, hygiene permits the development of strength and the invigorating of health. By proper diet and well layed down rules for the care of the sick, hygiene enables us to carry them safely through prolonged and debilitating diseases. Moreover, by establishing the rules of prophylaxis, it has, to use Dr. Brouardel's happy expression, rendered contagious diseases *preventable,* and thus affords the best means of protecting health. It may be said that hygiene has lessened the mortality rate throughout the whole world, and a higher compliment cannot be paid to our profession.

In order to fulfill his duties efficiently, the physician must be a firm believer in hygiene. Not only has he to oversee the general hygiene of families, in order to develop therein health and strength, not only has he to adopt special hygiene to each case, but if he does not want to lose his patient, but he has, moreover, in dealing with contagious diseases, to protect public health; this is not the least important of his duties, for according to the well known axiom "an ounce of prevention is worth a pound of cure."

Of all sanitary measures, that of prevention, or prophylaxis of contagious diseases, stands in the first rank; this has been fully verified by facts. It is admitted beyond question, and civic authorities look upon it as the corner stone in the foundation of public sanitation, in all civilised countries. International hygiene has its written laws, and the establishment of quarantine is the natural outcome of armed prevention—a peaceful measure if any—since its sole aim is to safeguard the life of the inhabitants within its limits, but nevertheless, a measure sanctioned by law and to which all travellers must submit.

Great centres of population do likewise in order to protect public health. Municipal hygiene has its rules and regulations which are enforced in every instance where civic authority has a right to intervene. Thus does it look after the purity of the water supply, the cleanliness of the streets, the sewerage system, and proper sanitation of houses, schools and manufacturing establishments, etc. This is as it should be, since its object is to prevent the spreading of epidemics and thus preserve the life of the rate payer.

But if international hygiene, under the control of governments, and municipal hygiene under the control of civic authorities, have created for physicians, positions worthy of the ambition of those wishing to make a speciality of hygiene, it is not for this particular reason that hygiene becomes of prime necessity for the general practitioner. He would certainly not be doing justice to his profession, if he were unable to second the efforts of the sanitary authorities; but it is not at the frontier, not at the city hall, that, in the ordinary course of things, a forcible and effective intervention is expected from him: *Where he must act, is in the home and in the family circle.* Hygiene, be it general, special or prophylactic, will furnish in this instance, as I stated heretofore, the surest means of maintaining health and prolonging life.

Allow me to enter more deeply into the matter.

*General Hygiene:*—If the health of the masses depends upon international or municipal hygiene, the health of the individual rests entirely upon domestic hygiene, and here it is we enter upon the field proper to the general practitioner.

Domestic hygiene has also its laws, any violation of which would be a source of great peril. The whole community, without exception, must abide by them to preserve their health, to develop and maintain intact their physiological functions. "Life," says Bichat, "is the concourse of phenomena opposing the causes of death." To develop and preserve health, that is, life, is therefore, to increase the power of resistance and is altogether, the best method of prophylaxis. Have we not, for example, obtained splendid results by the proper care of children? It

was sufficient to give the child the proper diet, free from any noxious ingredient, in order to dispel those digestive troubles which so frequently endanger the health and existence of the young organism. The mere sterilisation of milk has done more towards the preservation of infants than all the most highly recommended treatments for gastro-enteritis.

What hygiene has accomplished for children it has also accomplished for adults. I know it is difficult to control the feeding of grown up children, but nevertheless, hygiene must not be excluded from the house, it is on the contrary, in middle age that hygiene is most required. Take any badly heated, badly ventilated, and above all, any badly drained dwelling, and not even the most vigorous can resist. Without the prompt intervention of hygiene, they will soon become a prey to anæmia and cachexia, in spite of all the chalybeate or other tonics you might prescribe. Diet, in all ages, will have to be regulated by wise and well established measures, to prevent complications arising from alimentary intoxication, and serious disturbance of nutrition due to repeated errors of diet, finally degenerating in gout, obesity and Bright's disease. And while you will unsuccessfully try upon your patients the limited resources of a seldom effective therapeutic treatment, they will, if ever better enlightened, bitterly regret the advice which you have not given them, and which might have induced them to be more careful. And what will I say of the old man whose arteries are encrusted with the rust of arterio-sclerosis, and whose least transgression means cerebral apoplexy? Would not a proper diet, regulating intestinal functions and preventing ptomain formation, be worth a hundred times more than the best attendance, once his brain is furrowed by a severe hæmorrhage?

Hygiene is required at any and every age, and tends to promote happiness and comfort in the family circle, more so than luxury and expenditure. How often will you not be consulted upon this subject? Will you always be ready to answer? Let us hope so, gentlemen, if you have at heart the fulfilment of the duties incumbent upon your calling. Upon you only will devolve the solution of these problems. In this respect you are the natural adviser of the family, its best friend. Teach your patients to appreciate your advice; you will be looked upon as belonging to the inner circle of the family, and called to share to a certain extent its home life ; and you will be no longer considered as the dreaded being who only crosses the threshold, treading in the footsteps of disease, and whose presence seems the forerunner of death.

*Special Hygiene:*—I, by no means, intend to convey the idea, that the physician's relation towards his patient is to be despised. It would not.

be doing justice to the invaluable services rendered at all times by our distinguished physicians. However, I will firmly maintain, without fear of error, that therapeutics cannot depend solely upon materia medica; because, even in his character of healer, the doctor cannot dispense with hygiene. A patient under the treatment of drugs alone would only be half treated, it would be doing away with the salutary results of nursing, so essential to his welfare.

You will give great care during the University course to the study of medicine, materia medica and therapeutics, and will be shown in clinics a great many diseases treated according to the most rational methods. I can foretell that you will be surprised to ascertain how few diseases have specific remedies and how often the treatment must be symptomatic. We are greatly indebted to bacteriology for having so thoroughly made known to us the means of defense of the organism and for having proven that, in the great majority of cases, the stimulation of the natural body defenses must be the physician's first attempt at treatment. Even here, hygiene will render you incalculable services, and will not only enable you to stimulate the nerve centres, those great regulators of human physiology, but will moreover, oxygenate the blood and give increased activity to the emunctories. This sums up physiological defense. Ventilation of the sick room, open air treatment, hydrotherapy are hygienic treatments, without equivalents in the most elaborate treatise of pharmaceutics.

How many of the gravest chronic maladies are beyond the reach of materia medica. For instance, what drug would you give in the treatment of an arthritic diathesis ? What remedy would you prescribe in the treatment of cirrhosis of the liver, of sclerosis of the spinal cord, or Bright's disease ? What specific would you administer for dyspepsia ? However, the lesion exists, the patient's life is threatened. Is is not here that hygiene will help you the most, and by rest and diet, delay for an indefinite period the fatal ending of an incurable disease ?

A mitral lesion cannot be restored, but the hygiene of the heart will have the good effect of maintaining compensation and postponing indefinitely the indication for digitalis.

In cases of acute or chronic disease, I repeat it, hygiene has its place. Without it, treatment would be necessarily deficient, and even alone it may avert the ill-effects of an organ unable to perform its functions. It is owing to an efficient hygiene, rather than drugs, that we are enabled to prolong the life of patients.

*Prophylactic Hygiene:*—But if hygiene, gentlemen, figures only as secondary in the treatment of inflammatory and chronic diseases, its prescriptions take the lead in cases of contagious diseases and the reason

is, that here the danger becomes general. The patient himself is not alone threatened, but his family, and the community at large. For the patient, the danger lies in the infectious nature of the disease, exposing him to serious complications, to secondary lesions, to toxæmia, entailing upon those who have the care of him, constant and careful watching, and first class nursing. For the family, the danger is in the possibility of contagion, which may spread to all the children instead of one, incapacitate the adults and the bread-winners, endanger the life of the aged, and convert the home, not only into a hospital ward, but also into a centre of infection. Then the community at large is seriously threatened, since this contagious and infectious disease may spread beyond the threshold of the infected house to the neighbouring dwellings, and find its way to the school, the work-shop, the stores and warehouses, soon to overtake the whole or part of the city, when it is no longer a source of contagion but a centre of epidemic.

If certain contagious diseases, such as whooping-cough, measles or mumps, are rather of a benign nature, who can predict the extent of the ravages caused by an epidemic of scarlet fever, diphtheria, small-pox, or cerebro-spinal meningitis ? It even often happens, that a contagious disease in a mild form, such as la grippe, gives rise to most serious complications, and spurs on inherent constitutional vices. Finally, gentlemen, you are not ignorant of the frightful ravages caused by tuberculosis, the great scourge of humanity, which creeps insidiously through all classes of society, and is responsible for a fifth of the general mortality of the world.

When face to face with a contagious disease, the skilled physician has a lively feeling of the existing danger and of the responsibility incumbent upon him. He is well aware, that it is no longer a case merely for a prescription to be filled by a druggist, but that there are other steps to be taken. He must not only try to save the life of his patient, but he must also safeguard the health of those surrounding him, be they his relatives, friends, or fellow citizens. For this reason in a case of contagion, a physician imbued with the responsibility of his position, immediately takes preventive measures.

You will have to be familiar with the means of preservation furnished by prophylactic hygiene. You will notice that they are classed under four principal headings :—

(1) Isolation,
(2) Antisepsis and disinfection.
(3) Vaccination.
(4) Notification of the sanitary authorities.

It is needless to further insist upon these points, for it would be go-

nig beyond the limits of my subject; but I beg of you to study with the utmost attention, this part of hygiene, since its application will be of paramount importance in your daily practice. Allow me to insist upon the fact, that the efficiency of these preventive measures has been duly proved. To be convinced of this, we have only to glance at the results obtained in large cities, special establishments, and daily practice. Have not isolation, ventilation, antisepsis and disinfection freed hospitals from septicæmia, gangrene, and erysipelas ? Have they not reduced to their minimum, the purulent complications of wounds and operations, and crowned the audacity of modern surgery with the most happy results ? Has not cleanliness so completely banished from lying-in hospitals that so much dreaded scourge of parturient women, *puerperal infection,* that all criticism has been silenced ? Even more, the benefit of antiseptic prophylaxis has been extended to private practice, and should a case of infection befall you, all blame and responsibility are imputed to you alone, and to no other. Has not the sterilisation of milk so transformed infant asylums that from 90 per cent. the mortality has fallen to 20 or 30 per cent.? Has not typhoid fever been almost banished from the barracks of France, by the introduction of the use of filtered water ? Has not vaccination, Jenner's gift to mankind, eradicated smallpox from Germany, and enabled other countries to shear this dreaded contagion from its horrors and place it among things of the past ? And since we have broached the subject of epidemics, has not hygiene by the establishment of quarantine, been instrumental in keeping out of the European Continent, cholera and the bubonic plague, or at least preventing its spread beyond certain quarters in sea-port towns ? Here is what has been done in England in the battle with pulmonary tuberculosis; by cleaning up the densely populated districts, by carefully supervising the cases of tuberculosis, by disinfecting the contaminated dwellings, and by popularising the notions of modern hygiene in regard to the methods of prevention of this disease, the rate of mortality from consumption has fallen 45 per cent.

The efficiency of hygiene is to-day proven beyond doubt ; it is an undisputed fact. The achievements of modern sanitary science are justly appreciated throughout the world, its regulations are enforced everywhere; governments realising the importance of, and the necessity for public sanitation, have taken control of public health, and all civilised countries have special organisations, such as boards of health, quarantine, isolation hospitals, etc.

And what is the reason of all this, gentlemen ? The main one, one of humanity and economy—to bring about lowering of the mortality rate. I am at a loss to find a more charitable, a more praiseworthy

motive, which is, you are well aware, the basis of the medical profession, and towards which it constantly directs its efforts. Were you for a moment to lose sight of this, you would not be doing justice to your calling.

No, gentlemen, you will never falter in your duty. Once enlightened and conscientious graduates from McGill University, you will become through conviction, the pioneers of hygiene, anxious to fulfil the duties of your calling, and bearing in mind that hygiene is preëminent among medical sciences you will constantly look to its enforcement in your daily practice. It will prove invaluable for the preservation of the life and the health of your patients, furnishing you with the best weapon against disease.

Discarding all idea of unscrupulous gain, refusing to take as a basis of your calculations the number of patients you will be called upon to treat each year, you will not speculate on the spreading of epidemics, but on the contrary, you will do your utmost to prevent the breaking out of diseases, and your success will be, in your own estimation, your highest reward.

Your patients will look up to you as educators gifted with unlimited authority, and practising what you preach. Thus shall you go through the world, with the confidence and respect of the public, who will consider you, not only as a healer, but as a savant able to prevent danger, and will be all the more grateful to you, since before treating them to prevent their dying, you will have taught them how to live.

These facts, gentlemen, which I have just exposed, are daily acknowledged by the universities, whose efforts tend to foster, to bring up to date and improve the teaching of hygiene, in order to do justice to its importance. McGill University, in this matter as in others, was not to remain behind. Not only has it founded, as in other universities, a special chair for the teaching of this important branch of medicine, but it has, moreover, established special laboratories, museums, wherein you will acquire in its minutest details the practical application of public and private hygiene. Going a step further, and with the view of definitely sanctioning the primordial usefulness of hygiene, your University has inaugurated a special course and grants diplomas for the benefit of those among you having the ambition of becoming experts in hygiene. This calls for the most hearty congratulations; for, by the establishment of these lectures in hygiene, McGill University not only qualifies you the more for the fulfilment of the duties of your profession, but it renders possible in the near future the dissemination of the knowledge of practical hygiene throughout the Dominion of Canada.

# ON THE TEACHING OF ANATOMY TO MEDICAL STUDENTS.

## INTRODUCTORY REMARKS ON THE OPENING OF THE COURSE IN ANATOMY AT THE MEDICAL FACULTY OF McGILL UNIVERSITY, SEPTEMBER 21st, 1900.

BY

FRANCIS J. SHEPHERD, M.D.,
Professor of Anatomy, McGill University.

After welcoming the new students and the old and giving some good advice, the lecturer then spoke on the subject of "Anatomy as a Science, and Anatomy for Medical Students." He said :—

The physiology of one vertebrate animal is exactly like that of another. Human physiology is not, one would say, specialised. But it is very different with anatomy—the anatomy of the human animal is very much specialised and his anatomy, for obvious reasons, has to be learned for medical and surgical purposes in a more exact and minute way than the anatomy of the lower animals.

Although approving of teaching anatomy from a morphological point of view when taught as a pure science, still, for medical students, with their multitudinous subjects and the yearly increasing amount of new work, a little morphology goes a long way. Of course it adds interest to the course, as does the introduction of comparative anatomy,—it clears up many obscure points and the reason of apparently useless structures is explained. For the more advanced students morphology has its uses. However, to the average students, who find it hard to keep up with the work gone over daily, the essentials only of anatomy should be taught, his memory should not be loaded with useless details, such as the anastomoses of arteries about joints, the minute description of such bones as the palate, wrist bones and many other points which will suggest themselves to the senior student.

It is argued that the learning of such things is a good discipline to the mind, but there are many more important things that may be dwelt on for that purpose. I always hold that the dissecting room is the place where a student should learn his anatomy. In the lecture room he is told how and what to learn, and now-a-days the lecture is more of a demonstration than anything else. The introduction of a beautifully dissected subject is useful to the student after the lecture, but to try and show a large class special points in the dissected subject is impossible. It is in fact a survival of the time when subjects were only obtained at long intervals, and when obtained, all the neighbouring medical

men were called together, and the subject was dissected and demonstrated before them.

Lectures should be demonstrative and explanatory, and should elucidate those points which are difficult to understand; here diagrams, blackboard drawings and lantern slides, are of use, and specimens may be passed around showing the points the lecturer wishes to emphasize. The occurrence of anomalies, the bearings of comparative anatomy and embryology on the points alluded to, should be noted, in order to awaken the interest of the student which is usually dormant.

After osteology, I consider the nervous system and the viscera the most important. A medical student cannot know too much about the viscera, both as an aid to the study of physiology and as the most necessary part of his preparation for the diagnosis and knowledge of disease. He should know the position of the viscera so well that in looking at a patient he should be able to picture to himself exactly how they are lying and what relation they bear to one another, as if in fact he had a skiagraphic eye.

The anatomy of the blood-vessels, save from a surgical standpoint, has ceased to be of such importance as it was. When the chief major operations were the the tying of blood-vessels, special attention was paid to this branch of anatomy, but now that operations are performed daily on all the cavities and their contained organs, the ligature of blood-vessels is not regarded with much dread. Anæsthesia and antisepsis, together with the modern means of arresting hæmorrhage, have relegated the surgery of the blood-vessels to a very subordinate position. Of course it is most important to know all the main vessels and their relations, but the knowledge of the smaller vessels and their anastomoses is not of much importance, especially as it will probably exclude the acquisition of other matters more essential.

Of late years the anatomy of the lymphatics has become more and more important, and the intimate bearing this system has in the spread of malignant disease has been well shown of late by many surgical observers. A knowledge of the situation of the glands, and the course of the lymphatics entering them, is necessary to every one of you who expects to practice medicine and surgery.

The nervous system, within a few years, has much widened in importance from a practical point. The knowledge of diseases of the nervous system has grown apace and operations on the greatest nerve centre, the brain, are not uncommon, and are often brilliantly successful.

The importance of knowing the action of muscles and their nerve supply, need not be dwelt upon, as it is so self evident. So you see there is still a good deal of anatomy that is essential, though many of the older ideas about it have become obsolete.

Still medical students now-a-days have so much to carry in their heads that I feel when teaching anatomy that only such points as will be of real service, and a knowledge of which is absolutely necessary, should be dwelt on with any great minuteness. It is the average students I am now alluding to, for they will form in the future the chief bulk of the practitioners of the country. The fact is, the amount of knowledge that it is necessary to acquire for a medical degree has increased with so great rapidity that impossibilities are often expected, and it is overlooked that the brain power of the student has not increased, *pari passu*, with the amount of knowledge required.

In the dissecting room your work will be supervised by demonstrators and the student will be examined from time to time on the part dissected, and special demonstrations will be frequently given by the various demonstrators to small classes, on the viscera, organs of special sense, brain, etc. The first year student should endeavour to most regularly attend the demonstrations of the teacher to whom he is allotted, and should before Christmas be very familiar with osteology.

Now I wish to impress on you all the necessity for individual work. Rely on your own exertions and find out things for yourselves ; verify your dissecting manuals by accurate observation ; do not be always running after the demonstrators to have your anatomical work digested for you. Everything you work out for yourselves will be much better remembered than what will be told you by the demonstrators. Feed yourselves ! Don't rely on spoon feeding ! If you do you will be sure to suffer from anatomical rickets or scurvy. Hear what Solomon says, " In all labour there is profit, but the talk of the lips tendeth only to penury."

In this college histology is taught separately from anatomy or physiology—a questionable proceeding I think—and embryology is an appanage of physiology ; however embryology is from time to time touched on in this course in a brief way and the development of blood vessels, organs, etc., is shortly described before discussing the organ itself.

It seems to me that in teaching anatomy to medical students one should always keep in view the use they are afterwards to make of their knowledge ; hence, one should not insist on the acquisition of certain obscure and difficult but interesting points of no particular value—it is difficult for the average man to retain even a small part of what he is taught, and for this reason the useful should predominate over the interesting but useless matter. The chief object of all medical teaching it to make the student into a good practitioner, not an anatomist, a chemist, a pharmacist, a biologist or even a bacteriologist. In every class there are certain men of more capacity and industry than others,

these men I am always anxious to encourage and lead into the higher walks of anatomy, and I urge them to make independent investigations and interest themselves in morphology. But to the average man (to whom I have so often alluded in this address), morphology must take the place of something else which is more useful. I often find a student will retain a smattering of morphology of the shoulder girdle while he will fail to answer the simplest question on the liver and brain, and not be able to find the healthy appendix in the cadavre while he can tell all about the labyrinth of the ear.

The longer I teach the more I am humbled and the less pride I have in my capacity as a teacher, and the more I wonder at the small amount of receptivity of the average man ; many apparently absorb knowledge readily, but when squeezed little comes out. Perhaps they might be compared to casks in which the spigot is carefully closed but the bung is left open.

I speak not only as a teacher of anatomy but as a practitioner, one who has daily to apply his knowledge acquired in the dissecting room and one who is also a teacher of surgery in the hospital wards, and I say this, and I wish to impress it upon you, viz : that I and my colleagues are daily amazed at the small amount of anatomy retained by a fourth year man. I am frequently astonished at the gross ignorance of men who did well in anatomy in their second year and who now, when the time has come to apply that knowledge, are weighed in the balance and found wanting. I wish to impress upon you the importance of retaining all the practical knowledge of anatomy you can. When you have passed your second year examination, don't, pray, throw away your anatomy as you would a coat on the approach of summer ! Remember that winter will come when you will need your coat, or that the hospital wards will have to be attended, where in the diagnosis and treatment of disease you will want all the anatomy you have ever learned. I never yet met any man who knew, or thought he knew, too much anatomy. So endeavour all you can to keep up the most practical parts, at any rate, of your anatomy.

I have conversed at medical meetings and other places with numbers of intelligent and thoughtful practitioners, and their daily regret was that they had not more time when at college to devote to the practical study of anatomy, or that they did not more fully take advantage of the opportunities that were offered them. This question of time for practical anatomy is becoming yearly more important, for with advancing science, new subjects (and the newest are always the most important) are constantly cropping up and old ones are developing, and more and more demands are made upon the student at the expense of anatomy.

It is sad to think of anatomy being pushed into the background, but so it is. The study of the most practical and daily useful of all subjects to the practitioner of medicine, is having less and less time given to it, notwithstanding the extension of the courses.

The experience of years has considerably modified my views as to the teaching of anatomy. Teachers of anatomy now in the most modern medical schools are too much specialised, as are the teachers in the other primary subjects, and though it is perhaps heresy to say it, if pure anatomists would take an occasional hospital course, it would do them good and give them much insight into the needs of medical students.

I beg of you all to make the best use of your privileges and opportunities while you may, be thorough in all you do ; do not slur over your work, and do not work for examinations only, for they are not the end of all things—work to know the subject and then you need have no fear of examinations.

# THE TREATMENT OF CANCER OF THE FEMALE BREAST.*

BY

JAMES BELL, M.D.,

Professor of Clinical Surgery, McGill University ; Surgeon to the Royal Victoria Hospital, Montreal.

It is, I am sure, quite unnecessary to quote statistics to convince men who are actively engaged in the practice of medicine, of the prevalence of cancer of the female breast, of the suffering and great mortality which it causes, and of the frequency of recurrence after its removal. And this, too, in spite of the fact that enormous advances have been made during the last quarter of the century, in the knowledge of what we may call the natural history of cancer, and of its surgical treatment. Indeed, at the present time, the tendency is rather towards complacency than towards dissatisfaction and unrest, with regard to the treatment of cancer of the breast ; and to a certain extent this is justified by the excellent results which are obtained by well conducted operative treatment, in the ordinary run of cases which come to the hands of the surgeon. Most physicians, however, will admit that there is yet much to be desired in the general results of treatment, and will readily recall cases in which their best services have been but futile efforts to relieve suffering, and encourage resignation to a hopeless issue. The question is, therefore, well worthy of our serious consideration:—Whether or not something more cannot be done for these unfortunate sufferers.

The present status of the subject may be briefly stated in the following propositions :—

(1) That cancer is primarily a local disease, extending, (a) by infiltration, (b) by extension along the lymphatics, and (c) by metastasis. Of all these methods of extension, that by the lymphatic vessels is by far the most important. It has been shown (vide London Lancet, 1892, Watson Cheyne), that the lymphatic vessels from the mammary gland converge towards the areola, and that cancer extends along them, and is carried thence by the cutaneous lymphatics to the axilla ; and Heidenhaim has shown that cancer also extends from the deeper portions of the gland along the lymphatics lying upon the pectoral fascia to the glands in the axilla. These facts are in accord with clinical observation, and all observers agree that when cancer develops in the mammary gland, there is in all, or, at least, in nearly all cases, a very early invasion of

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the axillary tissues ; and operators rarely fail to find cancerous glands in the axilla, even when the most careful examination before operation, fails to show any evidence of such invasion.

(2) That the only treatment which offers the patient any hope, is removal of the growth, which should be early and complete, extirpating the whole of 'the infected structures by incisions through the healthy tissues, beyond the remotest extensions of the disease. (The development of serum-therapy gives us ground for hope that some day cancer may be a curable disease, but up to the present time 'we have nothing but operative treatment to rely upon : all other so-called methods of treatment may be ignored).

For thorough removal by operation, the minimum requirements, whatever form the incisions may take, or in whatever order the steps or the operation may be carried out, are wide and deep removal of the tissues surrounding the mammary gland, the underlying fascia, and superficial layer of the pectoralis major muscle, at least, and the whole of the axillary lymphatic and cellular tissue. In many cases it is necessary to remove the greater, or even both, pectoral muscles; and, indeed, many surgeons consider this step always necessary; and in any case the operation must include all diseased lymphatic glands in the posterior triangle of the neck and along the subclavian vessels.

Portions of the bony wall of the chest have been removed, but there is a limit to this procedure, and it can never be either very safe or very satisfactory. Up to this point we are upon safe ground, and when such an operation can completely circumscribe the diseased tissues, as it does in a large proportion of the cases which are operated upon, there is nothing further to be desired, but, in many of the advanced cases, the surgeon feels when the operation is completed, that although all diseased tissues, recognisable to the senses of sight and touch, have been removed, he has been compelled to dissect masses of cancerous growth from a 'perilously close relation with the walls of the axillary vessels and the cords of the brachial plexus. In short, he feels that if it had been possible to have removed these important structures without destroying the functions of the arm, he would have done so. Portions of the vessels may be removed, but to seriously wound the brachial plexus is to leave a painful and useless member, which can only be a burden to the patient.

Local recurrence in the axilla is, therefore, not uncommon, the first indication being œdema or lymphœdema of the arm and forearm and brachial neuritis. From this focus, extension into the neck and along the subclavian vessels occurs. Recurrence in the chest wall, and extension by the lymphatics through the intercostal spaces to the mediastinum, is much less common.

The obvious deductions are, therefore, if the case has been fairly stated :—

(1) That a sufficiently early operation, will effect a cure in the best sense of the term, and

(2) That in certain of the more advanced cases, an operation which would remove all the axillary structures, including the bloodvessels and the brachial plexus, from the level of the first rib outwards, would effect a cure in many cases in which after any lesser operation, early recurrence, and hopeless, miserable, distressing and painful invalidism for a short time, is all that remains for the patient.

It is to these two propositions which I wish to direct your attention.

(1) *Early Operation.*—Early operation implies early diagnosis; and, while operation is simple in proportion as it is undertaken early, diagnosis becomes more and more difficult under the same conditions.

There must always be a time when cancer is present but not recognisable, inasmuch as it gives rise to no symptoms in its early stages, and produces no objective physical signs, until some new growth has taken place and an enlargement can be detected. On the other hand, when a diagnosis can be made with tolerable ease and certainty,—when the classical signs and symptoms described in text-books and monographs are present,—the disease has already reached a considerable degree of development, the axillary glands are almost certainly infected, the operation for its removal must be extensive, and recurrence after removal is no longer an improbability. It is, therefore, of the utmost importance to make a diagnosis before this stage of development has been reached.

I believe that women as a rule detect very early any deviation from the normal condition of their breasts. Modesty and dread of operation, and perhaps, other causes, often impell them to keep this knowledge to themselves for considerable periods of time, but, if I may judge from my own experience, women who do consult a physician, in these very early beginnings of disease of the breast, often get very little satisfaction. The symptoms complained of are either explained away in an off hand manner, or the patient is given tincture of iodine to paint with, or an ointment to rub into the skin over the breast, her well-grounded fears are allayed or dissipated, and she is lulled into a feeling of false security, from which she will probably receive a rude awakening a few weeks or months later.

I do not underestimate the difficulty of making a diagnosis at this period, I only wish to emphasize the importance of endeavouring to do so. In fact, a positive diagnosis is impossible before certain well-recognized signs have appeared, but, in my opinion, every mass or growth in

the breast of a woman over twenty-five years of age, which cannot be clearly diagnosed as a cyst, abscess, fibro-adenoma, or of inflammatory origin, should be looked upon as a *possible* (I would almost say, probable) cancer, and serious special efforts should be made to come to a positive diagnosis. Among these serious special efforts I would include even an exploratory operation, if necessary.

A simple incision will detect a cyst or a chronic abscess, but if the simple incision does not make the diagnosis clear, I do not hesitate to advise the removal of the whole breast, with the understanding, that if a microscopic examination shows evidence of cancer, a more extensive dissection will follow within a few days. And if in serious doubt, I do not hesitate to recommend as wide removal as if I were certain of the diagnosis, even though the microscope may subsequently show that the disease is not malignant. The plan of having frozen sections examined while the operation is in progress, is not to be relied upon, as unless a positive result is obtained, it may very well be that a more extended examination of the whole breast will show evidences of cancer, when none can be found at the moment from the small portions removed for that purpose.

The following case which came under my care about five years ago (October, 1895), furnishes a good illustration of this fact, as well as of the difficulty of diagnosis.

This patient was an unmarried woman about fifty-five years of age, spare in build, but with good general health. Both breasts were enlarged by some form of new growth. The enlargement of the left breast had been first noticed about five years prior to my seeing her and, at the time of my examination, enlarged lymphatic glands were distinctly palpable in the axilla. The enlargement of the right breast had been first noticed three years before I saw her, and there was no evidence of enlargement of the axillary glands. A diagnosis of double mammary cancer had been made, and the patient was much depressed. For many reasons I doubted this diagnosis and advised operative measures, primarily to settle the question of diagnosis, and besides, as the proper treatment for the condition, if it were cancer. I arranged to remove the left breast and the axillary tissues (on account of the glandular involvement), but attempted to settle the diagnosis while the operation was in progress by the examination of frozen sections, in order that I might, in other respects, make the operation more or less radical, according to the results of the microscopical examination. The latter failed to discover any evidence of cancer, although the tumour, on section, had a very suspicious appearance. Further examination of the removed breast made it quite clear that it was cancerous. On the strength of

these facts the other breast was removed a couple of weeks later, in the belief that it too was cancerous, and careful examination showed that it was. Recurrence was noticed in the *left* axilla in the following September (1896), and two small masses were removed from beneath the pectoral muscles. This did not arrest the progress of the disease, and the patient died in January, 1897. This, it will be observed, was the breast first operated upon, under the belief that the disease was *not* malignant, a belief which was confirmed at the time by the negative result of immediate microscopical examination. It is probable, too, that, acting upon this belief, the removal of the axillary tissues was not as thorough as it should have been—hence the early recurrence ; while the right breast, which was removed after the diagnosis had been made and in the belief that the disease *was certainly* cancer, showed no signs of recurrence.

I would, therefore, urge that no breast tumour be looked upon lightly, when there is even a remote possibility of its being cancer (or sarcoma, for, of course, these remarks will apply to sarcoma as well as to cancer). By following the course which I have advocated, we may perhaps suffer in reputation and be called "alarmists," and suffer from the misrepresentation of having diagnosed cancer, when we had only discussed the possibility of it; but our aim must always be to bring disease under control, and to benefit the patient and the public; and the results of such efforts will be the education of the public and the profession as a whole to an appreciation of the value of an early diagnosis, and the risks of delay in recognising such a serious disease. In this way many valuable lives may be saved and much suffering averted.

In spite of all precautions, however, there will always be a considerable number of women with cancer of the breast, who, for one reason or another, do not present themselves for operation until the disease is far advanced,—so far advanced, indeed, (in the axillary tissues) that no operation, no matter how extensive and thorough, which stops short of sacrificing the upper extremity, can hope to effect a permanent or lasting immunity from recurrence, (as already indicated in an earlier part of this paper).

And why should not the upper extremity be sacrificed in such cases, if such sacrifice offers the hope of saving life at the cost of a member ? The advantages of an operation, which removes not only all the contents of the axilla, but its muscular boundaries as well, and gives the best possible access to the cervical lymphatic glands, are obvious; and the principle is universally adopted in surgery,—that no organ or member is sacred from removal, if its removal offers the hope of saving life. One has only to recall the appearance of the cadaver in the dissecting room,

when the upper extremity has been removed, to be convinced of the truth of this assertion. The operation of interscapulo-thoracic amputation is in itself scarcely more serious than the more extensive operations for removal of the breast as at present conducted, and, moreover, no one ever hesitates for a moment to advise this operation for other conditions, such as sarcoma of the upper portion of the humerus or of the scapula, or for gunshot wounds about the shoulder blade, etc., provided of course that there are no special contra-indications to the operation.

A few cases are recorded in which the arm has been sacrificed as a part of the operation, to ensure a thorough removal of the diseased tissues in the axilla (W. Arbuthnot Lane and Rutherford, *Lancet, Vol. II., 1895, pp. 904 and 1190*), but the principle does not seem to have been at all generally adopted. On the contrary, the tendency on the part of surgeons seems rather to be to place too much reliance upon a close dissection of the axilla; and the proposition to remove the arm, does not meet with a ready acquiescence by the general practitioner, who, to a very great extent, influences the mind of the patient. I do not wish to convey the idea that this should become a routine procedure, because in the great majority of the cases it is unnecessary, but I do feel that we should not allow our minds to become closed to the possibility of saving life by this means when it is impossible to do so by any other.

Looking back upon my own personal experience, I can recall several cases in which I think that I might have averted recurrence in this way. Recurrent cancer in the axilla may of course be treated in the same way but, unfortunately, by the time that such recurrence has been recognised, there is very frequently extension to the mediastinum along the subclavian veins or through the intercostal spaces, a condition which is beyond the reach of any operation. Quite frequently, indeed, as a rule, one cannot tell, before opening the axilla, whether this serious step will be necessary or not. I would, therefore, advise that in primary operations, the operation should be proceeded with in the ordinary way until the exact condition of the axilla has been determined, and then, if necessary (the patient's consent having been previously obtained), an interscapulo-thoracic amputation, modified as regards the skin flaps, etc., proceeded with.

I have, during the last four years, endeavoured to carry out this plan, but I have always found that whenever the operation was necessary, the patient, through an exaggerated dread of the danger and the mutilation, refused to allow the removal of the arm. This objection would, of course, be overcome in time, as the objections to all other formidable and mutilating operations have been overcome in the past.

In dealing with recurrence in the axilla, a typical interscapulo-thoracic amputation may be planned from the outset, just as in dealing with a sarcoma of the humerus or scapula. I do not wish to be understood as adopting a hypercritical attitude towards the methods generally employed in dealing with advanced cancer of the breast, but 1 can not admit that the last word has been spoken on the subject, and 1 cannot help thinking that the tendency is too much in the direction of slavishly following the lead of eminent surgeons, and thereby falling into methods of too routine a character.

In my opinion, the treatment of cancer of the breast at the present day is eminently creditable to surgery. My plea is for an extension of the benefits of surgical treatment in two directions, viz., to the earlier beginnings of cancer, when we may hope to effect a real and permanent cure without serious mutilation, and to the unfortunates, whose condition is already bordering on the hopeless. In only one class of the latter cases, where the danger is from the disease in the axilla, can any thing be done. We cannot, as practical surgeons, follow the disease beyond the bony chest wall, but 1 have no doubt that a more frequent performance of the operation up to this extreme limit, would yield the most beneficial results.

I am aware that there is nothing new in the suggestions which I have made, but I have reiterated them in the hope that they may stimulate to greater diligence in early diagnosis, and to greater daring in the treatment of the disease in its later stages.

# EXCISION OF THE KNEE-JOINT IN TUBERCULOUS DISEASE.*

BY

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The treatment of tuberculous disease of the joints presents difficulties which are often not easily overcome.  Of late the methods adopted in the surgical management of these conditions have been completely revolutionized.  During the past few years there is no class of diseases in which the progressive surgeon has had to change or modify his methods of surgical treatment more frequently than in that of tuberculous arthritis.  The explanation is to be found in the fact that the pathology of this affection has been better understood, the clinical course both before and after operation has been more carefully studied, and there has been a wonderful improvement in the technique of surgical interference.  We do not assume that we have yet learned the best methods of treatment, but we must continue our study here, as in other branches of surgery, in the spirit of that most progressive of all British surgeons—John Hunter—who, when Astley Cooper asked him whether he had not the year before stated an opinion on some point directly at variance with the one he had just put forth, replied: "Very likely I did. I hope I grow wiser every year," and of whom also it is stated that he remarked to a pupil on one occasion, "You had better not write down that observataion for very likely I shall think differently next year."

Sir Astley Cooper, more than half a century ago, must have had some prophetic insight into the future regarding the surgery of the knee-joint when he wrote regarding that articulation : "Recent experience appears to encourage the expectation that after an articulation has been laid open by violence, nature, aided by judicious treatment, may speedily produce such an alteration in its conditions as shall prevent, or at any rate diminish that excessive and almost fatal degree of constitutional irritation which has generally been considered the inevitable consequence of such lesions."  Whilst, it is true, these remarks were made regarding injury to the joint, yet they indicate the views held by surgeons at that time regarding the all but fatal consequences of opening the knee-joint.  Sir Astley Cooper anticipated better results for the future, and, had he lived until our day, he would have realized his expectations; the methods of Lister permit us nowadays to open the knee-joint with impunity, and it is the antiseptic method of dealing with our wounds which has completely revolutionised our procedure in this as in all other fields of surgery.  Arthrotomy is practically devoid of dan-

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ger and we unhesitatingly open the knee-joint when indications present themselves for so doing.

The indications for operative procedure in our treatment of disease in the knee-joint are various. I think it is conceded by all that in the early stage of knee-joint disease, at all events of the primary synovial type, rest is the proper treatment. This must be obtained on a suitable splint, and must be combined with open air life and proper constitutional treatment. There are, however, certain cases, more particularly of those in which disease has occurred primarily in the bone, which demand early operative interference. The operative procedure in such cases constitutes what is called in our present clumsy nomenclature "Partial" or "Complete Arthrectomy;" the latter term expressing the procedure if the whole of the diseased tissues be removed. In my own practice I have thus been able to remove such localised foci of disease. In different cases I have removed localised deposits of tuberculous disease from the internal and the external femoral condyles respectively, and again, from the head of the tibia. In the hip, similarly, I have removed disease from the neck of the femur without opening the hip-joint, the disease having been reached by entering the bone from the external surface of the great trochanter. I operated successfully in this way in a child 12 years of age some years ago, and succeeded in eradicating the disease. More recently, I thus removed successfully disease from the great trochanter and the femoral neck in a man 57 years of age. The operation is, however, more applicable to the knee than the hip, because the bony points are more superficial and therefore more accessible, and, in my experience, is attended with excellent results. If, however, one is dealing with diffuse synovial disease, and one finds that the disease is progressing in spite of rest and appropriate constitutional treatment, then one must open the joint and the operation must not be delayed too long. When these conditions present themselves and we decide to operate, we are often quite incapable of predicting the extent of involvement of the tissues of the joint, in fact, we are often far astray in the conclusions we form from an external examination merely, and when the joint is actually opened we frequently find much more extensive disease than we had anticipated. This being the case, we wish to employ a method of opening the joint of such a character that, with the least possible damage to the essential parts of the joint structure, we may explore the joint thoroughly; we may find it unnecessary to do more, and we thus content ourselves with a simple arthrotomy, on the other hand the conditions of disease may warrant our proceeding to a partial or complete arthrectomy, or we may resect the joint, or amputate the limb.

The conditions which must be fulfilled in the ideal operation are,

that the primary incision should be so planned, that it will be efficient either for simple artrotomy or may be utilized for the more radical measures if found necessary. Many suggestions have been made and carried into practice by various surgeons, but the operation which appeals to me as fulfilling these conditions most adequately is that introduced by Kocher of Bern—the operation described by him as resection by external "hakenschnitt." I may say at once that my recent experience with this operation has been my main inducement in writing this paper. The operation permits one to open the joint for exploration merely, or one may proceed at once to arthrectomy, excision or amputation.

The operation of excision of the knee-joint was apparently first performed as a definite procedure by Park of Liverpool, in 1781. Since that time various methods have been practised. The method which has been, and still is, most universally employed, is that by a curved incision with the convexity downwards, the centre of the incision crossing transversely the ligamentum patellæ. The flap is dissected up, the ligamentum patellæ being divided, and the joint is thus, by a very simple means, exposed and excision is readily proceeded with; free access to the joint structures being obtained. If we are certain before hand that complete excision is absolutely necessary, then the operation which I have alluded to cannot be improved upon. I operated in February of last year on a patient, 20 years of age, in this manner with excellent results. There has been firm bony anchylosis and he is walking about freely on the limb, although the disease was so extensive that a large amount of bone was excised, leaving him with nearly three inches shortening. There are many cases on record which show that after similar operations excellent results are obtained, and these results are permanent. Thus, Johnathan Hutchison records several such cases, one of these, 20 years after operation, reported that he had led an active life as a sheep farmer in Australia, and had had no trouble in the knee operated upon. The patient was 12 years of age when operated upon. Another patient upon whom he operated reported, after a similar period of 20 years, that he too had led an active life, he had walked across England and Wales, walking 25 miles a day; he could swim, skate, play tennis, ride on horseback, etc. This patient had been operated upon when a boy. Another case similarly successful had reported 13 years after operation which had been performed when the patient was 11 years of age. In all these cases firm bony anchylosis had taken place. No better results could be obtained.

Some surgeons recommend something short of complete excision (arthrectomy) in suitable cases. Whatever may be said in favour of this procedure in children, I think that in the adult, where we have

opened up the joint and we find that in order to get rid of the disease we must interfere materially with the joint structure, we should in such cases proceed to do a complete resection of the joint, thus securing firm bony anchylosis. Otherwise we are pretty certain to have an unstable joint with deformity. We should in these cases aim at firm, osseous union, and by this means we shall obtain the best result.

Occasionally, however, the disease may be completely eradicated by arthrectomy and a useful, movable articulation may be obtained. This is particularly the case in children, and in them there is the further advantage, in such operations as stop short of excision, that the epiphyses are preserved and there is the possibility of further growth of the limb, whilst after excision growth in length of the limb is not likely to occur as the epiphyses are in all probability destroyed, although, as I shall presently show, an attempt to save epiphyses should be made in many cases even in complete resection. Where, then, we propose to do arthrectomy and aim at obtaining a movable joint, the ordinary incision, cutting across the ligamentum patellæ transversely is not to be recommend. Kocher states as his conviction, and we agree with him, that if we are to preserve a useful, movable joint, the essential thing is to prevent injury to the extensor apparatus of the joint. The structures on the anterior aspect of the articulation must be left intact. This result is obtained if we are able to follow Volkmann's plan of procedure, a method which was also suggested by Golding Bird—I refer to that of opening the joint by making two vertical incisions, one on either side of the patella, and subsequently joining these by a transverse one, sawing through the patella transversely and thus opening the joint. A few years ago I thus operated on a lad 13 years of age who had suffered from trouble in the knee for four years previously. I found it necessary to remove the synovial membrane which was extensively affected; it was necessary also to sacrifice the crucial ligaments and to divide the lateral ligaments. The cartilage over the external femoral condyle and the corresponding tibial condyle were eroded, and a considerable excavation had to be made in the bone in these localities. A small cavity in the patella was similarly treated. Iodoform emulsion in glycerine, 10 grs. to the ounce, was rubbed into the wound, two silver wire sutures were put in the patella, and the wound closed without drainage. The limb was put in plaster of Paris and the first dressing was done 6 weeks after, when the silkworm gut sutures, which had been used, were removed. I saw the lad a few weeks ago and he is walking with scarcely a perceptible limp and little or no deformity of the knee. Firm, osseous union had occurred in the patella, and the result is that the extensor apparatus remains intact. But it is often impossible because of disease to preserve the patella or a

sufficient amount of it to obtain bony union in the manner indicated. It is in such cases that the operation of Kocher commends itself as the most useful procedure with which we are familiar. Before describing Kocher's operation let me state this further argument in favour of arthrectomy in children, that, even if the result is not all that we would desire in getting a good, functional, movable joint, free from deformity, yet, by arthrectomy, it may be possible to get rid of the disease; and with the epiphyses intact, we may tide the child over the period of active growth and, if necessary, we may operate, subsequent to that period, for any deformity that may be present and thus prevent much shortening of the limb. Even partial arthrectomy may be admissable under certain circumstances in children, as Cheyne has shown, rather than remove essential portions of the joint structure. The effect of partial removal of the disease in this way may lead to a complete cure or, short of this, it may tide the patient over the active period of growth.

Kocher preserves the extensor apparatus of the knee by making a vertical incision along the outer side of the joint as shown in the accompanying cut.
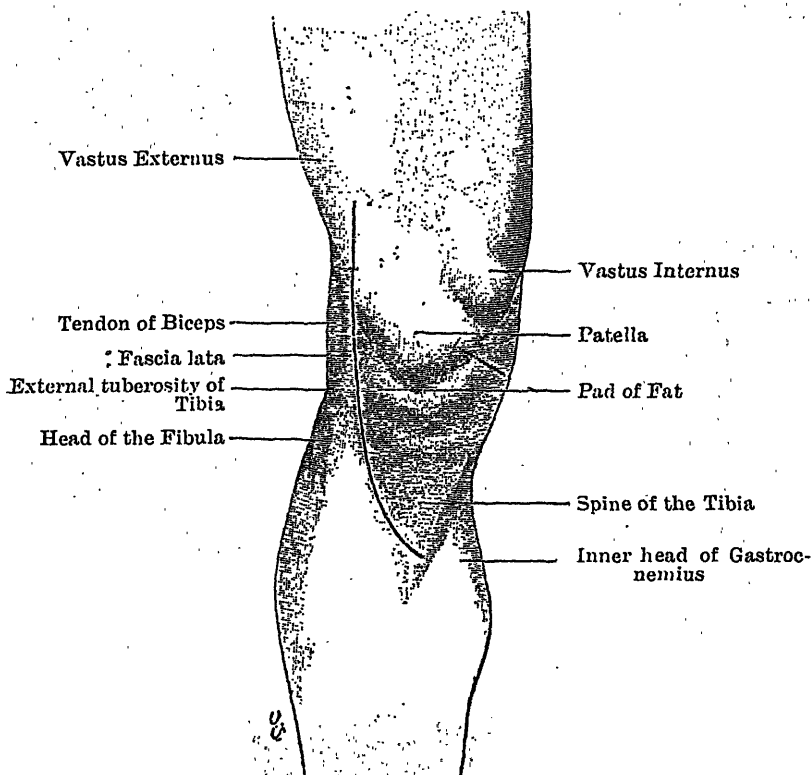


Kocher's incision for arthectomy of the knee-joint. (The cut is reproduced from Prof. Kocher's " Chirurgische Operationslehre," 1887 edition.)

The section begins over the vastus internus, a hands breadth above the upper margin of the patella, and passes first perpendicularly downwards upon the outer side of the patella, separated from that bone by two fingers breadth; below the patella it is carried with a slight curve inwards and ends on the inner surface of the tibia, having passed beneath the tibial spine. The skin is divided, and a transversely coursing vein. This exhibits in the bottom of the wound a very strong fascia with fibres descending obliquely downwards and forwards. This fascia is divided, and will be found specially thick in its lower part. In the upper portion of the wound there will appear the lateral margin of the vastus externus muscle which must be divided, below this is the outer surface of the joint capsule, whilst in the lower end of the wound will be found some fatty tissue and the lateral margin of the ligamentum patellæ, below this one cuts directly upon the bone as one passes beneath the spine of the tibia. By means of the chisel one proceeds to separate the tibial spine with the periosteum and the attached ligamentum patellæ, thrusting it towards the inner side. On cutting through the vastus externus, one exposes the external condyle and opens up very freely the recess under the quadriceps extensor cruris. Anteriorly, in the line of the joint, one separates the external semilunar cartilage from the anterior attachment of the crucial ligament and defines externally the tibial margin below the meniscus, separating the joint capsule along with the periosteum close to the external tuberosity of the tibia. One draws inwards with sharp hooks the ligamentum patellæ, and pulling this to one side, one separates the anterior attachment of the crucial ligament from the internal semilunar cartilage, the capsule together with the periosteum being separated, as on the outer side beneath the meniscus from the cartilaginous internal tuberosity of the tibia. Now one can dislocate the patella inwards. By more and more flexing the joint and loosening the capsule from the tibia below internally and externally, extreme flexion can be obtained. Now one must sever the attachment of the crucial ligaments from the intercondyloid eminence close to the bone, and from the posterior attachment of the meniscus. These, with the crucial ligaments, will be separated from the tibia to the posterior margin of the bone.

If one must now go on to complete resection, then the crucial ligaments must be separated from the intercondyloid fossa of the femur. So that these, together with the meniscus, the posterior wall of the capsule and the periosteum, remain in a mass situated posteriorly and still attached to one another. The capsule must then be dissected off the femur. When the lateral ligaments are to be preserved, they must be separated from the epicondyles subperiosteally, and the femur is

then sawn with a convex surface, and the tibia with a concave surface, after similarly loosening the capsule with the periosteum from its posterior margin.

If the bone is more deeply diseased, then the capsulo-ligamentous attachments must be subcortically separated for a correspondingly further extent. Kocher advocates the use of the chisel in separating the periosteum and capsule, especially from the femur. By this means he removes a cortical portion of the bone after the manner of König. The separation is carried as far back as the line of the saw cut.

I have performed this operation twice recently and am satisfied as to its utility. My first case was in a girl, 15 years of age, who had suffered from disease in the knee-joint for four years previously, and there was evidence of extensive disorganisation of the joint structure, and matters were becoming worse in spite of appropriate treatment by rest. I employed Kocher's incision and dissected out the synovial membrane; the semilunar cartilages were almost completely destroyed by the disease and were removed; the crucial ligaments had to be sacrificed also. A carious cavity was excavated from the head of the tibia—from the outer tuberosity. Emulsion of iodoform was rubbed into the wound and a single silver wire suture having been inserted in the tibial tubercle, the edges of the wound were united by silk-worm gut sutures and the limb put in plaster of Paris. A slight amount of suppuration occurred before the wound finally closed, but the final result was excellent.

My second case was that of a man, 28 years of age, who had suffered from tuberculous disease of the knee-joint for some 15 years previously. The trouble had become more aggravated of late and, on my advice, he determined to undergo operation. There were no open sinuses nor had there ever been. On examination, it was evident that there was extensive disease of the joint with envolvement of the ligamentous structures. The tibia was dislocated backwards. On opening the joint by Kocher's incision, I found the semilunar cartilages destroyed and there was extensive erosion of the articular cartilage of the femur, tibia and patella. A pocket of pus, containing about one ounce, existed behind the outer tuberosity of the tibia. I proceeded to perform complete excision of the joint. The articular portion of the patella was sawn off and the articular portion of the femur was sawn so as to leave a convex surface, and that of the tibia so as to leave a concave surface. Iodoform emulsion was rubbed into the wound and sutures of silk-worm gut inserted. I followed Kocher's suggestion in inserting certain of these sutures deeply, so as to hold in place the detached tibial tubercle and the other deep structures in the wound, a suitable dressing and a plaster of Paris splint was applied. The plaster was removed on the

12th day and the stitches taken out. The patient still wears the plaster splint. The wound has healed kindly and the pain, which was endured previous to operation, has entirely disappeared.

These two cases have convinced me that Kocher's "Hakenschitt" is a very great improvement over the older methods of operating. As far as I am aware the operation has not hitherto been described in the English text-books or periodicals, and I have therefore thought it worth while publishing a detailed description of the procedure. It is a very simple operation, gives free access to the joint, and the incision is so planned that one may utilise it for simple arthrotomy or, if necessary, one may proceed to partial or complete arthrectomy, or to excision or amputation. It is the only method of which this can be said. Langenbeck suggested an internal vertical incision, shorter and much more curved than Kocher's, some years ago, but it is impossible to gain access to the joint with sufficient ease through such a limited opening, it is not suitable for drainage, and it is said that it subsequently tends to the production of genu valgum. Stanley Boyd advocated (*British Medical Journal*, p. 656, vol. 1, 1897), longitudinal division of the patella and the patella ligament, he had performed this operation successfully in a man 50 years of age and saved a movable joint. Sédillot and others advocated two limited, lateral, vertical incisions. None of these operations fulfil the requirements as does Kocher's method.

There are some other points in the details of Kocher's operation which deserve notice. When resection is performed, he advocates the sawing of the femur and the tibia so as to obtain a convex lower extremity of the femur and a concave upper surface of the tibia. This I find gives all the security which Kocher claims for it. The suggestion of this method was, I believe, first made by Professor Fenwick of Montreal, in 1871, and it is remarkable that it has not been more extensively employed. One distinct advantage of it in children is that the epiphyses are the more readily preserved from danger than if the usual method is employed. If we examine a section through the knee-joint and study the epiphyses in relation to the convex lower extremity of the femur and the irregular upper surface of the tibia, we can readily convince ourselves of this fact. The suggestion of Lockwood (*Brit. Med. Jour.*, p. 656, vol. 1, 1897), of shaping the upper end of the tibia into a wedge, the apical crest of which runs antero-posteriorly, and fitting this into a cavity prepared for it between the condyles of the femur, does not commend itself to us, because the epiphyses must necessarily be sacrificed by such a procedure. It is supposed to prevent lateral displacement, but as a fact this seldom occurs in complete excision.

Pegging the sawn bone together by ivory pegs or steel pins has had

its advocates, but it would seem unnecessary in complete excisions carried out in the manner advocated, as firm, bony anchylosis without deformity may thus readily be obtained.

Kocher advocates the subcortical method of König and Tilling in dealing with the ligaments and tendons. A chisel is used to separate a cortical portion of the bone, wherever possible, along with the attached ligament or tendon. This appears a good suggestion, and the procedure would be of more value than that adopted by Langenbeck and Ollier, the well known subperiosteal method of detaching the structures under consideration. Kocher chisels off an apophysis to which a tendon or ligament is attached. The final result of using this subcortical method is than firmer consolidation occurs in the wound and, more particularly in arthrectomy, a better functional result is obtained.

Lastly, let me state that excision of the knee is an operation which is attended with a great amount of shock, far more, for example, than would be the case in amputation at the knee or through the thigh. The operation is, therefore, not to be lightly undertaken. We should not hesitate to operate, however, where the disease is progressing after a fair trial of expectant treatment. Such cases usually have a prolonged and tedious illness if the operation is not undertaken, and even if they do recover, the result is a stiff joint, whilst a useful movable joint may, in many cases, be saved by operation. This remark of course applies mainly to children because in adults firm, bony anchylosis is always what we aim at, and for this reason early interference in adults is not as a rule good practice. One's best judgment must be exercised in each case individually, and things must never be allowed to go so far that the only choice finally lies between complete excision or amputation.

# ON THE FORMS OF APHASIA MET WITH IN ABSCESS OF THE LEFT TEMPORAL LOBE.

BY

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An abscess in the left temporal lobe may give rise to a speech defect or it may not. Very considerable accumulations of pus may be situated in this region without any apparent speech disturbance, while, on the other hand, a small purulent focus may be enough to give rise to marked disturbance of speech. In speaking of defect of speech in this paper I intend to refer solely to aphasia, and not to either slowness of speech or to dysarthria.

Aphasia is probably present in nearly 50 per cent. of abscesses of the left temporal lobe. The exact form of aphasia met with is, however, rarely treated by writers on this subject with any degree of fulness or exactitude. The simple but vague statement that aphasia is present, being all that is found in the great majority of text-books, even in those dealing more especially with diseases of the nervous system. A few authors refer to *word-deafness* as being the only characteristic symptom of lesion in the temporal lobe. This form of aphasia is, however, comparatively rare. It would be a mistake to wait for its appearance in any case before concluding we had to do with an abscess in this situation. A pure and complete motor aphasia has been met with as also paraphasia, the presence of the former being explained by distant pressure, and that of the latter by the cutting off of the connections between the auditory and motor centres.

Within a few months I have had an opportunity of observing two cases of abscess consecutive to ear disease in the temporal lobe. In both a clinical type of aphasia was present which differs from the forms above referred to. The conditions were so similar that I believe they teach a useful lesson in helping to determine more easily what is often a difficult problem, i. e., the differential diagnosis between temporal abscess and abscess elsewhere in the brain.

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* Read before the Canadian Medical Association, Ottawa, September, 1900.

## CASE I.

### Abscess of the Temporo-Sphenoidal Lobe Consequent on Purulent Otitis Media—Aphasia—Operation—Death Three Days after from Meningitis.

A delicate man, aged 22, was admitted into the Royal Victoria Hospital on August 5, 1900, under the care of Dr. Buller. In the early part of March of the present year he had an attack of influenza followed by acute purulent otitis media. After suffering severely for four days from pain in the left ear, a discharge occurred, this being followed by great relief. Under treatment, the discharge gradually ceased and he was apparently well on the first of May, although deaf and suffering from tinnitus aurium. The treatment of the ear continued,—Politzer inflation twice weekly and painting the throat with an iodine-glycerine solution. This treatment was continued daily till the first of July and afterwards three times a week.

On the 15th of July there was a sudden and violent recurrence of the pain in the ear lasting for about ten days. On the 26th of July he was seized with rigors and vomiting, the pain and tinnitus at the same time ceasing. At that time his temperature ranged between 100° and 101.5° F. The headache recurred on many occasions, however, and at the time of his entrance into the hospital he was suffering very severely. The vomiting occurred two or three times daily and was distinctly cerebral in type.

On admission, he was found to be suffering from more or less constant and severe headache with vomiting. He was slow in answering questions and from the history it would appear that since the onset of the sudden pain, etc., ten days previously, he has had great difficulty in naming objects. This difficulty still persists. It is found that he is unable to mention the name of any object whatever. He does not know his own or his mother's name. He, however, has a very extensive vocabulary of words and knows their proper use. Although he is unable to name an object he has no trouble in proving that he understands the use of objects he is totally unable to name. He understands perfectly what is said to him and he also correctly obeys commands given in writing. He is able to write from dictation and to copy correctly. He reads correctly and easily. The left ear is not discharging ; the canal is narrow. The membrana tympani is congested but not perforated. There is no swelling or tenderness about the mastoid ; a watch is heard at half an inch. *Eyes.*—The pupils are normal in size and reaction. There is distinctly a beginning double optic neuritis.

A diagnosis of abscess of the temporo-sphenoidal lobe was made and immediate operation determined on. Dr. Buller opened into the

mastoid cells. He found pus. Dr. Bell proceeded to expose the brain over the temporo-sphenoidal region and after opening the dura, he found the parts bulging, but not pulsating.

With a trocar he was able without any trouble to find a pus-containing cavity in the left temporal lobe. Nearly three ounces were evacuated. The night after the operation the patient slept better than he had done for many weeks, being free from pain and discomfort. Even within twelve hours after the operation it was noticed by several observers that there was a distinct improvement in his speech. In twenty-four hours the improvement was so marked that it could be said that he had completely recovered his lost power. All kinds of test objects were promptly and correctly named. Unfortunately about thirty hours after the operation, symptoms of meningitis developed, which proved fatal forty-eight hours after their onset.

A postmortem examination was not obtained. This does not, however, detract much from the clinical value of the case, as during life the presence of the abscess had been demonstrated.

## CASE II.

### Abscess of the Temporo-Sphenoidal Lobe Consequent on Purulent Otitis Media—Aphasia—Sudden Death from Respiratory Failure.

A girl, aged 18, who spoke both French and English, was admitted into the Royal Victoria Hospital on the 16th of February, 1900, complaining of headache and vomiting. The headache dates back to Christmas of 1899. It has been persistently present and generally severe, keeping her awake at nights. Pain has been generally referred to the left temporal region until a few days ago, since when its site has been continuously frontal. The vomiting set in about four weeks after the pain in the head was felt. It has been, with the exception of the last few days, more or less persistent since its onset.

A difficulty in speaking has been noticed since the headache has been first complained of. She seemed unable to utter the word at once which she wished to say. One of her friends expressed the difficulty in the words that "she seemed for a few moments to have forgotten what she wanted to say and only by an effort would she say what she wanted." The difficulty of speech rapidly increased in severity and in the course of a few days reached the intensity that it presented at the time of her entrance to hospital, six months after its onset. During the past month she has had several general convulsive movements, lasting about fifteen seconds and attended by loss of consciousness.

*Past History.*—When nine months old the patient had a purulent discharge from each ear lasting for three months. At three years of

age she had pneumonia followed at intervals by measles, chicken pox and whooping cough. At fourteen she had a discharge from behind the right ear (eczema), lasting three months. For a period of three days in the month of October last she suffered from frontal headache and vomiting. Both ceased and she has remained perfectly well up to the onset of her present symptoms on Christmas day, 1899.

The family history is of no importance.

On admission, she was found to be in a lethargic state, answering even simple questions with difficulty. She speaks very slowly and takes a considerable time before she attempts the answer to a question. She is unable to tell even approximately the time of onset of her trouble. She does not misplace words. Although well educated, she is not able to comprehend written language fully, being only able to pick out in a sentence here and there short simple words. She is able to write her own name, but otherwise her writing to both dictation and copy is imperfect, especially so to dictation. When asked to write "main" she writes "yen." In copying "donnez" she writes "danny." When asked to name simple objects shown her, she is unable to do so. When shown a pen, a key, a watch, etc., she is quite unable to recall their names either in French or English. All spoken commands appear to be clearly and perfectly understood although the response is slow. She has greater difficulty in recognizing individual letters than individual words.

*Motor Power.*—There is a slight paresis of the lower respiratory branches of the right facial nerve. Movement in all other parts is normal.

*Sensation.*—There is neither subjective or objective disturbance in the face or extremities.

*Reflexes.*—Superficial normal ; the knee jerks are much diminished and more so on the right than on the left side.

Dr. Buller reported on the conditions of the eyes and ears.

*Eyes.*—The right pupil is slightly larger than the left, but both react readily to light and accommodation. There is blurring of both optic discs and engorgement of the vessels, but it can hardly be said that there is a definitely established optic neuritis.

*Ears.*—She hears only on contact on both sides. There is a suppurative otitis media on the left side, with involvement of the bones of the roof of the tympanum. There is a profuse and fœtid discharge from the left ear.

The patient remained in the state described for several days, the only noticeable addition to the above symptoms being the development of the optic neuritis.

A diagnosis of abscess of the temporo-sphenoidal bone was made and an operation was determined on, but a few hours before it was to have taken place, the patient suddenly expired, the immediate cause being respiratory failure. I am indebted to Dr. Shirres for the following notes of the postmortem examination performed by him.

The membranes situated in the left middle fossa of the skull were markedly thickened, particularly over that part of the petrosal bone which forms the roof of the tympanum. The bone beneath was carious. The tympanum was also found diseased, but the mastoid cells were normal. The brain in the region of the temporal lobe on the left side was distinctly swollen and œdematous, being at least a third larger than the lobe on the right side. The convolutions were flattened and sulci shallow. On attempting to remove the brain, an abscess, coming to within about 3 mm. of the surface, burst about a quarter of an inch below the Sylvian fissure with the escape of about 40 c.c. of pus, having a foul odour, a greenish tint, and an acid reaction. About the middle of the under surface of the third temporo-sphenoidal convolution, on that part of the lobe that lies directly over the roof of the tympanum, an area of 3 cm. in breadth was discoloured and almost black and on the verge of rupturing. Nothing abnormal was to be seen in any of the other convolutions except in the hypocampal convolution of the left side, which was much swollen and displaced.

The brain having been hardened in 10 per cent. formalin solution, was then divided into five sections after Hamilton's method. The relations and extent of the abscess could now be accurately determined. There were found to be two distinct abscess cavities; one, the smaller, of very recent formation and higher placed, was situated mainly in the lower part of the first temporal convolution. It was from this abscess that the pus had escaped on removing the brain. The lower abscess, or the primary abscess, was confined chiefly to the middle and lower temporal convolutions, measured 50 mm. from before backwards, 40 mm. laterally, and 25 mm. from above downward and held over 40 cc. of fluid. This abscess had a firm and thick capsule with a smooth inner surface. There was no communication between the two abscesses, or between either of them and the ventricles. The walls of the upper abscess were irregular, the tissue being necrotic and discoloured. There was no trace of membrane. This abscess, as already mentioned, corresponded to the lower part of the first temporal convolution, extending internally from a depth of about 3 mm. from the cortex, reaching in front close to the external capsule near the base and anterior end of the lenticular nucleus, and behind to the level of the descending horn of the lateral ventricle.

From examination of the different sections of the brain an idea of the extent and relations of the abscess can be made out.

Section I.—Brain tissue normal. This section was composed of Broca's middle and superior frontal convolutions.

Section II.—Anterior surface : no disease can be seen. Posterior surface: superiorly a distinct necrotic area of the secondary or superior abscess is clearly seen lying in the substance of the superior temporo-sphenoidal convolution below the well marked fissure of Sylvius, extending from near the cortex inwards to the external and inferior angle of the lenticular nucleus. Below can be seen the capsular lining of the anterior end of the lower abscess cavity. The white fibres arising from this temporo-sphenoidal lobe and going to join the fibres of the internal capsule, are markedly destroyed. On handling this section we can make out that the disease is distinctly confined to the temporo-sphenoidal convolutions. The fissure of Sylvius intervenes between the diseased convolutions of the lobe and the præcentral and postcentral convolutions above, and Broca's convolution in front.

Section III.—Here again the disease is distinctly confined to the temporo-sphenoidal convolutions. Posteriorly we see two large abscess cavities bounded above by the fissure of Sylvius, internally by the descending horn of the lateral ventricle, and below by the swollen hypocampal convolution, the lingual and the fusiform. On the under surface of this section, near the external edge of the inferior temporo-sphenoidal convolution, is a necrotic area, the most dependent part of the large abscess cavity, and the wall here is very thin and on the verge of rupturing. On holding the section up to the light this is easily demonstrated.

Section IV.—Anterior surface : here again can be noticed the posterior extremities of the two abscess cavities bounded laterally and above by the hinder quarter of the Sylvian fissure, and internally by posterior and descending horns of the lateral ventricle ; the posterior surface shows no trace of disease.

After the examination of the five sections one is persuaded that the disease was strictly confined to the temporo-sphenoidal convolutions, and that the angular gyrus, supramarginal and frontal convolutions were intact.

In both cases the type of aphasia was the same, a loss of the power of naming objects. In both cases there was not sufficient visual defect from the optic neuritis to interfere with fairly good vision, neither was there any cortical visual defect as far as could be ascertained. Both patients recognised fully the use of objects presented to them ; they also understood without difficulty spoken language, showing that there was no word deafness.

The examination of the brain after death in the second case, showed that neither the posterior part of the first temporal, nor the third left frontal convolution was interfered with, the destruction of tissue being confined to the lower and more anterior parts of the second and third temporal convolutions. Although no examination of the brain in the first case was obtained, it is almost certain that the destruction of tissue occurred in the same area as the other case, that is, it was confined to the lower and anterior part of the temporal convolution. The rapid and almost complete recovery of the power of speech after the operation is strong evidence in support of the limitation of the destructive process to the temporal lobe.

How is an aphasia solely characterised by an inability to name things to be explained by a temporal lobe lesion ? Is it due to destruction of what has been called the *naming centre ?* There is considerable evidence in favour of setting aside a special part of the brain for such a centre. It was first suggested by Broadbent, and more recently ably supported from the results of clinical observations by Dr. C. K. Mills of Philadelphia. He looks upon the third temporal as the seat of the naming centre. The inability to name objects may, however, be due to the cutting off of the association tracts between the visual centre and the auditory centre, on the one side, and the latter and the motor centre for speech, on the other.

Whether these two cases were examples of direct injury to a "naming centre" or the cutting off of it from its connections, I am unable to say, but they are both of value, especially the second, as showing that a form of aphasia characterised by an inability to remember the name of objects or to recollect names, may arise from a destructive lesion confined to the temporo-sphenoidal lobe. This form of aphasia, present in a any suspected case of brain abscess, would, therefore, be of value in determining its localization.

To illustrate the conditions found in Case No. II.

FIG. I.

THIRD VERTICAL SECTION.—ANTERIOR SURFACE.



Sylvian Fissure

1st Temporal
Upper Abscess Cavity

Anterior end of Lower
  Abscess Cavity

Sylvian Fissure
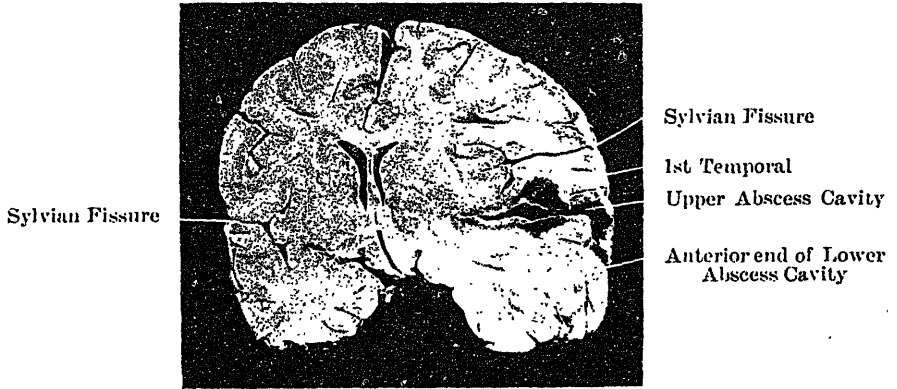
FIG II.

FOURTH VERTICAL SECTION.—POSTERIOR SURFACE.



Sylvian Fissure

Upper Abscess Cavity

Lower Abscess Cavity
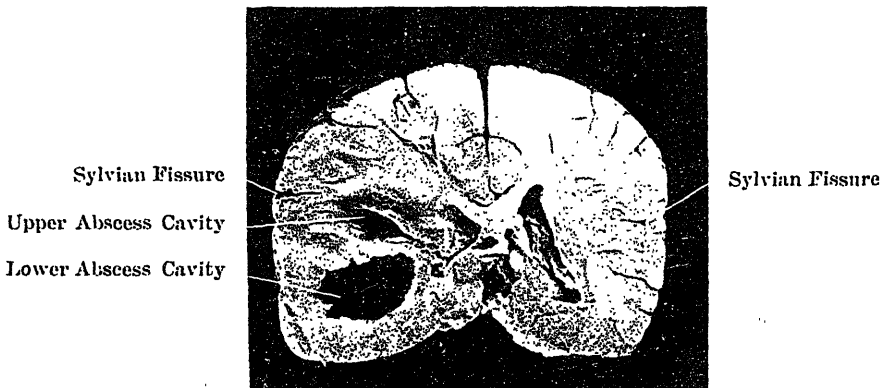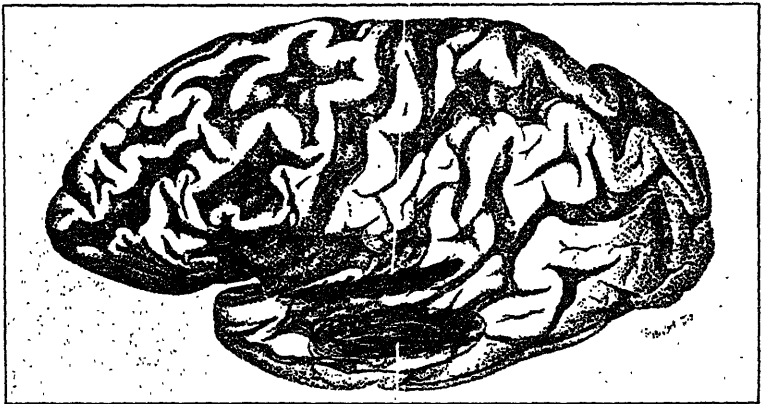
Sylvian Fissure

## FIG. III.

Showing outline on the cortex corresponding to the abscess cavities.

Outline of Upper Abscess Cavity.



Outline of Lower Abscess Cavity.

# VARIETIES OF COLON BACILLI ISOLATED FROM MAN.

BY

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The discovery of the colon bacillus by Emmerich in 1885 in the blood, organs, and alvine discharges of cholera patients in Naples, its later isolation from normal and abnormal fæces by Weisser and its further accurate differentiation from other intestinal bacteria coupled with a minute account of its biological characters by Escherich, were the three scientific achievements which laid the foundation of our modern knowledge of the flora of the alimentary canal.

In the decade and a half which have passed since the observations of these men, a more or less universal interest has been centred in the varied reactions of this organism under artificial laboratory conditions, while the elucidation of the problems connected with its widely spread habitat in nature and the growing belief in its power as a pathogenic agent to cause serious lesions in man and animals, have become more and more the excuse for a careful study of its life history.

Since the original description of the colon bacillus, many allied forms have been isolated in normal and pathological conditions, from sources both within and without the animal body, and bacteriologists have become convinced that this organism, instead of being the simple and possibly only constant inhabitant of the lower bowel in man, should in reality be looked upon as a group of bacilli, the many members of which differ considerably from each other in their cultural features and their pathogenic action.

Within a short time after Escherich's work Booker, in an exhaustive study of the bacteriology of summer diarrhœa, isolated seven different members of the colon group related to each other in their fundamental characters, but separated by important, although minor tests. In the then state of our knowledge of this organism Booker was unable to give a classification of these forms which he considered satisfactory and contented himself with naming the different varieties and calling attention to their principle reactions.

The experience of Booker in regard to the differentiation of these colon forms has been duplicated in many laboratories since the publication of his results and the confusion which necessarily arises from the

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study of the same or allied micro-organisms by observers working in widely separated institutions in different countries, has been engendered by the universal employment of obscure and indefinite terms in bacteriological protocols.

The beginning of the present movement among scientific students to adopt definite known terms of positive or negative value in the description of intestinal bacteria was made in 1895 by Theobald Smith, who employed the fermentation tube in the separation of the different members of the colon group, estimating the quantity and composition of the gases formed from the different carbohydrates, as well as the rapidity of their evolution and the temperature best suited for their development. By this means Smith was able to give accurate data concerning the reactions of the typical B. Coli Communis as compared with B. Typhosus and B. Lactis Aerogenes, and to make out a number of intermediate forms related to these organisms.

Two years later, Gordon following the work of Smith in connection with the fermentation of the sugars and employing as well as a criterion of specificity, the number of flagella the different forms possess, was able to distinguish twenty-two distinct varieties of the colon species. Meanwhile Adelaide Ward Peckham had published the results of her work on the indol-producing powers of the typhoid and the colon. By cultivating an indol-producing colon on a variety of media she could deprive it of the capacity to generate indol. Again, she could impart this function to a bacillus not ordinarily producing this substance. Going still further she found that she could cause the Bacillus Typhosus itself to give definite reactions for indol. In fact, Peckham was able to cause every non-indol-forming colon and every typhoid culture to which she had access, to assume the property of producing indol.

In her work Peckham frequently met members of that group of micro-organisms which seemed to stand midway in their cultural features between the bacillus of Escherich and the bacillus of Eberth. Such forms as B. Choleræ Suis and B. Enteriditis of Gærtner, had long been considered to form the intermediate stages between these two species. It remained for Durham, however, to call special attention to these forms and to divide the whole series into three groups consisting of :

1. The Eberth Group—including B. Typhosus and its allies.

2. The Gærtner Group—including B. Enteriditis and its allies.

3. The Escherich Grop—including B. Coli Communis and its allies.

The Gærtner group includes besides B. Enteriditis of Gærtner, B. Choleræ suis, B. Morbificans bovis of Basenau, B. Breslaviensis of von Ermenghen, the Wurstvergiftung bacillus of Fischer, B. Friedeber-

gensis of Gaffky and Paak, the Cotta Fleischverigifttung bacillus and a number of similar organisms described by various observers in epidemics of meat poisoning.

Cushing has recently made this group the subject of elaborate study in connection with the problems of fermentation, reactions of acidity and alkalinity imparted to the media, and pathogenicity. He groups with these intermediate forms the bacillus isolated by Sanarelli from yellow fever patients, a bacillus isolated by Gwynn from a cervical abscess and a bacillus which he himself has isolated from an abscess over a rib, called by him Bacillus O. or, by other workers, Paracolon Cushing.

The agglutination test so valuable in the recognition of the bacillus typhosus has proved in Cushing's hands to have an equal significance in the study of these intermediate forms. Cushing's work in this particular has recently been confirmed by McCrae working under Adami.

The term *Paracolon*, introduced originally by Gilbert to indicate the members of the colon group which differed in a few reactions from the typical colon, has found a ready acceptance among bacteriologists. Under the nomenclature of paracolibacillary organisms, Gilbert has described five different types. The first type has two members, the *opaque* variety of B. lactis aërogenes of Escherich, identified by its opaque yellow colonies on gelatine, and the *transparent* variety of the same, identical with the bacillus of endocarditis of Gilbert and Lion.

" The paricolibacillus of the second type is distinguished from the B. Coli by its inability to generate indol; that of the third type by its failure to act on lactose ; that of the fourth type, by the absence of motility and of the power of generating indol ; the fifth type by lack of motility, incapacity of producing indol and inactivity in respect to lactose, three of the cardinal properties of the colon."

The chief objection to such a classification is the unreliability of the reaction for indol, which as stated above has been shown to be an inconstant character of any organism.

The recent work of Fuller and Johnston, in which they classified the water bacteria found in the Ohio River, according to a large number of constant characters—using those reactions which were recommended by the Bacteriological Section of the American Public Health Association, and eliminating any tests which failed to give 100% of constancy, has suggested to the writer the advisability of adopting a somewhat similar classification in the descriptions of members of the Colon-Typhoid series. Therefore, all of the organisms which were in the laboratory were subjected to the treatment recommended by Fuller and Johnston, namely, they were grown in broth three days, in gelatine plates three days and on slant agar three days after which time the various culture media were seeded.

By such a means an organism is forced to assume a constant laboratory character, parallel in a way with the constant character it may have in its normal habitat. We thus avoid in our description of its biology that period in the life history of any bacterium when it possesses inconstant features, as is the case for instance, immediately after isolation from the intestines. The various members of this series have been classified as far as possible in accordance with these constant characters and the result of this classification is the chart which is appended to this paper. While the different types described seem to be separated from each other by only a few characters, yet each type is represented by a number of corresponding cultures and the organisms of one type never assume the properties of other types. In order to assure completeness in this table of bacteria the reactions of B. Typhosus were estimated at the same time and the reactions of B. Lactis Aerogenes and B. Cloacæ are taken directly from the tables of Fuller and Johnston. The fermenting properties of certain members of the intermediate group as well have been adopted from Cushing's paper, as some of the cultures used in Montreal died out.

The typical Bacillus Coli Communis originally described by Escherich is a motile bacillus without the property of forming spores, whose diameter is less than 1 micromillimeter. It forms a scum on broth, with production of a turbidity, is not dull or wrinkled on agar, fails to show a characteristic appearance on gelatine plates. It causes an abundant growth of potato, grows in the closed arm of the fermentation tube, grows as an anaërobe, grows at body temperature, and is affected by the range of the reaction of the media. It does not liquify gelatin casein or blood serum; it produces gas with dextrose, saccharose and lactose; it produces nitrites, indol and a fæcal odor, produces acid and coagulates milk. On agar it is not chromogenic or fluorescent, but usually prefers an agar which is slightly acid in reaction. It is pathogenic for mice in intraperitoneal inoculation of 1 cc.m. doses of a 24-hour fluid culture.

The estimation of these reactions while apparently simple may at times be very difficult of attainment, as the colon when first isolated from the body does not show a characteristic biology. Its morphology is subject to the greatest variation. It may appear either as simple rod-shaped bacilli, as straight bacilli many times the length of the typical form, maintaining the same diameter throughout, or as a diplococcoid body, as has been pointed out by Adami. The latter form, according to Adami, is more or less an attempt on the part of the organism to form resistant bodies, and is the condition in which the organism appears in the tissues. Cultures from internal organs which on section

show no bacilli but only a profusion of coccoid and diplococcoid bodies, from secretions like ascitic fluid which show the same bodies, will invariably grow out after a lapse of 24 hours into a typical colon bacillus. The same may be said of the long straight forms which are often encountered in the fluid from the gall bladder. These, like the diplococcoid bodies, invariably produce bacilli differing in no particular from the typical colon in morphology and belonging to some pure type of this species.

The question of motility has been disputed by different observers and the colon has been said at times to possess and at other times not to possess this character. Examined in a 24-hour fluid culture, the organisms classed as colon or allied forms, have never failed to show active motility. The velocity of the colon is not as great as that of many motile bacilli but its appearance is unquestionable. Despite the fact that Theobald Smith, in determining the position of an organism which in its cultural features corresponded to the hog cholera bacillus but which lacked motility, unhesitatingly placed it with the hog cholera group, according to Fuller and Johnston permanent absence of motility must be considered as a radical departure from the pure colon type.

The production of gas in carbohydrates must be studied only with sugars which have been sterilised in the steam steriliser—for the pressure and temperature of the autoclave are sufficient to break down saccharose and lactose into the simpler dextrose and by-products. It is essential in studying the colon that these three sugars be used, as certain varieties ferment one and not the others ; only the typical colon and its near allies fermenting all three carbohydrates.

The test for indol has never yielded a satisfactory result. Only broth which has been rendered free from sugar by the previous growth in it of a fermenting bacillus can be utilized for this purpose, for it has been shown by Theobald Smith that a small amount of carbohydrate will inhibit the formation of indol. Even with this precaution the different varieties of colon seem to produce this substance in a most unreliable fashion, some forms only producing it when fresh from the intestine. Probably the only possible way of estimating this character with accuracy will be to utilize large quantities of sugar-free broth which after an incubation of 15 to 20 days may be distilled and the distillate tested for indol and by-products. In this way Dr. Bruere of the Royal Victoria Hospital is at present endeavoring to ascertain the differences between the various paracolibacillary forms.

The perception of a fæcal odor, similar to the test for indol, does not give always that reliability which is desirable in the estimation of a constant character. Like all tests which depend on the sense percep-

tion, of smell, which differs so largely in different individuals, the fæcal odor can only be considered as a doubtful reaction.

The production of nitrites may be estimated in connection with the routine tests for indol by sulphuric acid, when one uses a broth which does not itself contain traces of nitrites. A more reliable method, however, since ordinary broth or sugar-free broth contains this substance, is to utilize a Dunham's solution made from a peptone free from nitrites, or the so-called nitrate broth containing a small percentage of potassium nitrate and a little peptone. In either case the organism by its growth may directly reduce the nitrates to the nitrite condition, or, breaking up the peptone, oxidise the nascent nitrogen to a nitrate. The test may preferably be made with nitrate broth, using Dunham's solution as a control.

The inoculation of the colon bacillus and its allies on agar tubes, the reaction of which varied between an acidity of 1.5° and an alkalinity of 6.0, revealed a fairly constant law in regard to the profusion of growth. The colon grows most abundantly on agar which is slightly acid or of an acidity of 1.5°, the growth on neutral agar being as a rule slightly less. As one passes from the neutral to the alkaline agars the abundance of growth rapidly diminishes—an agar of an alkalinity of 1.5 giving a less visible growth than the neutral, 3.0 agar only a faint growth, 4.5 agar only traces, while an agar of an alkalinity of 6.0 inhibits the growth entirely.

All of the organisms belonging to the colon, typhoid or intermediate groups which we have worked with may be divided into a certain number of types which are represented on the chart. For convenience of description only, they have been arranged in certain orders, not that they necessarily have this place in nature. The different varieties of pure colon, if we may use the phrase, have been divided into, Colon A., B. ,C., D. and E.

Under Colon A., have been included all those forms which correspond to Fuller and Johnston's table of characters. These colons ferment all the sugars, produce indol, nitrites and a fæcal odor ; grow luxuriantly on potato and produce a scum on broth. They are pathogenic in all cases to mice by intraperitoneal inoculation. As a rule they grow most luxuriantly on neutral agar.

The second type, named Colon B., differs from the first in never producing a pellicle on broth. It produces indol and a fæcal odor, grows most luxuriantly on agar of an acidity of 1.5° and is pathogenic. While the characters separating this type from the previous one seem so slight as not worthy of making a separate class, yet the confusion of statements in the literature about the colon at times produc-

ing a definite scum on broth, and at other times not, and the experience in the Molson laboratory that the form of organism which produced a scum always did so, and the form not producing such a scum invariably failed to do so—has led us to formulate these two types. In fact, the majority of bacilli which were encountered in Montreal correspond to type B. rather than type A., but for uniformity of description Fuller and Johnston's colon has been considered the model form.

Between Colon B. and the next type C. may be most conveniently placed those forms which have lost their pathogenicity. This doubtless may occur with any variety of colon under unfavourable conditions of growth and cannot be said to constitute a different variety. This loss in pathogenicity was encountered in only one form, a variety obtained from Dr. Harris in Baltimore. All other varieties of colon, with one exception to be mentioned later on, were pathogenic in intraperitoneal inoculations.

If we combine loss of pathogenicity with loss of motility we have a form which is identical with B. Lactis aërogenes of Escherich, not producing indol or a fæcal odor, but agreeing in its other reactions with B. Coli Communis. As has been indicated above, these differences should suffice to make this form a distinct variety, separated as it is by constant unvarying characters.

Under Colon C., have been included those forms which agree with the typical colon in most of its reactions, but differ in the fermentation of the sugars. Dextrose and lactose are fermented, saccharose never. A scum is produced on broth, indol is formed and a fæcal odor exudes from the cultures. This variety also has been encountered a number of times.

Colon D. includes bacilli similar in all respects to the preceding, in respect of the fermentation of lactose and dextrose, but like Colon B., the corresponding first derivative from Colon A., it fails to produce a definite pellicle on broth.

A further derivative of the pure colon is that form which produces fermentation with dextrose and saccharose but not with lactose. It has been described frequently by earlier writers and is a well recognized variety of B. Coli Comm. In our case it was not pathogenic, did not produce indol, nitrites, or a fæcal odor, but otherwise was identical with the prototype Colon A.

As we pass from these varieties of paracolibacillary organisms which ferment two of the three sugars, to those which ferment but one, namely dextrose, we enter upon the intermediate group of Gærtner, or the Hog Cholera group. The first form which is encountered here, which goes by the name of paracolon, is the organism of Cushing called by

him Bacillus O. or by other authorities, Paracolon Cushing. It may well be called Paracolon A., and may serve as the introduction to the intermediate group. Isolated by Cushing from an abscess over a rib, this form possesses characters intermediate between typhoid and colon. It grows very slowly on potato, giving a visible growth only after several days incubation ; it ferments dextrose, not lactose and saccharose ; it does not coagulate milk or produce acidity ; it produces indol after the lapse of a number of days, has a fæcal odor and is pathogenic to mice.

With the paracolon of Cushing may be grouped B., variety Hatton, of Durham and B. Morbificans Bovis of Basenau, which isolated from far different sources by different observers agree in so many details as to be placed by Durham in this intermediate group, all the members of which are pathogenic. Included in the same group are the so-called " icteroides " isolated by Sanarelli and Reed from yellow fever patients. These bacteria differ from the preceding only in the formation of a moist luxuriant growth on potato, fermenting only one sugar—dextrose— as the other forms do. Associated with these icteroides we have placed a further variety which has been called Paracolon B. It was obtained from the liver of a healthy rabbit and was originally considered to be a simple colon derivative. It agrees in all cultural features with the organisms of Reed and Sanarelli, and without doubt belongs to this group—failing to ferment lactose and saccharose and failing to produce acidity in, or to coagulate milk.

Among the intermediate members of this group should doubtless be included paracolons isolated by Widal and Gwynn. The description given by Widal is too meagre to furnish a means of classification but the work of Gwynn and of Cushing on the paracolon isolated by the former shows clearly the place this bacillus should occupy. From Gwynn's description has been compiled the life history of this bacillus and it has in this way been included in the chart. It is actively motile, grows on bouillon as a distinct cloud, not forming a pellicle, acidifies milk faintly, without coagulating, gives a luxuriant growth on potato and does not liquify gelatine. It ferments dextrose, not lactose or saccharose and it does not produce indol.

The next member of this group is the B. Choleræ Suis, which is identical with the others in the main characters, yet liquifies gelatine and blood serum. Because of these characters it has been placed last in this group and has been associated with the B. Cloacæ which is yet more positive in liquifying gelatine, casein and blood serum. The latter produces indol, nitrites and fæcal odor, has a luxuriant growth on potato and produces a scum on broth. Naturally it does not belong

to this intermediate group and has only been mentioned here for purposes of comparison with B. Choleræ Suis.

Intermediate between colon and typhoid but approaching more to the type of the Eberth's bacillus, are a number of little known and little studied forms of paratyphoid.  The only organism which we have encountered which seems to belong to this group is one we have provisionally named Paracolon C.  It was obtained from the liver of a healthy rabbit and is evidently allied more to typhoid than to colon, forming a faint growth on potato but not producing indol or a fæcal odor, not coagulating or acidifying milk, nor fermenting the carbohydrates.  It seems to be closely related to the form isolated by Flexner from cases of dysentery, in association with the amœba coli, agreeing with it in its fundamental characteristics.  It, like Flexner's organism, should doubtless be classified as a para-typhoid.  It corresponds, as far as can be told, with other varieties of intestinal bacteria described heretofore, especially the non-fermenting varieties of Widal and Gilbert.

The B. Typhosus stands next for purposes of comparison.  This organism is too well known to need any further words, but its place in this chart is justified by reference to its invisible growth on potato, its failure to produce gas or to coagulate milk and its being non-pathogenic for mice under ordinary laboratory conditions.

The next organism in our series of paracolibacillary forms, which is named Paracolon D., provisionally, has been isolated in two instances, from the stomach of a healthy man in one case and, again, from a typhoid spleen.  It is the furthest removed from both the colon and typhoid type and represents a variation from the colon in not fermenting any sugar, not producing nitrites, indol, or a fæcal odor, in not growing on potato, not being pathogenic, and in liquifying gelatine.  In morphology it is a fine short bacillus, barely distinguishable from a micrococcus and its especial characteristic is the growth on slightly alkaline agar as a faint film which after a lapse of 48 hours seems indistinguishable from the substratum of medium.  While it may be identical with other intestinal bacteria described before, yet we have not come upon any similar organisms recorded in the literature and we are therefore inclined to look upon it as a new species.  It has been named provisionally Paracolon D.

From the study of the organisms given in the chart, one is convinced that while a proper biological classification of bacteria is still as far as ever from attainment, yet much may be done by this graphic method in illustrating the relations which the different intestinal bacteria bear to each other.  With one or two exceptions the bacteria described here are well known forms which have already been reported.  By means of

such a table of constant characters it becomes possible however, to fill in the gaps of our knowledge concerning intestinal bacteria, and adopting standard reactions in our descriptions, by means of a comparison of results in different laboratories, to arrive at a more and more complete knowledge of the colon and its allies the paracolibacillary organisms.

I wish to express my thanks to Dr. Adami, under whose supervision the work reported in this paper has been carried out, and to Dr. Harris of Baltimore, who has furnished me with a number of cultures from the Johns Hopkins Pathological Laboratory.

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| Type. | Name. | Investigators. | Source. | MORPHOLOGY. | | | | BIOLOGY. | | | | | | | | | | | | | | | | | | | | | | | | | | PATHOGENICITY. |
| | | | | | | | | CULTURAL FEATURES. | | | | | | | | | | | | BIOCHEMICAL FEATURES. | | | | | | | | | | | | | | |
| | | | | | | | | Broth. | | Agar. | | Gelatine Plate. | Potato. | | Fermentation Tube. | | | | Liquifaction. | | | Gas Production. | | | | | Milk. | | | Agar. | | | Mice. |
| | | | | Bacillus. | Diameter greater than 1 micromillimeter. | Motile. | Spores. | Scum. | Turbidity. | Dull. | Wrinkled. | Characteristic appearance. | Visible. | Luxuriant. | Growth in closed arm. | Grows at body temperature. | Facultative anaerobe. | Affected by range of reaction. | Gelatine. | Casein. | Blood Serum. | Dextrose. | Saccharose. | Lactose. | Nitrites. | Indol. | Acidity. | Coagulation. | Faecal Odor. | Chromogenesis. | Fluoresence. | Most favorable reaction. | Intraperitoneal Inoculation. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Colon A.... | B. Coli Com ...... | Escherich | Normal Intestine .. | + | − | + | − | + | + | − | − | − | + | + | + | + | + | + | − | − | + | + | + | + | + | + | + | + | + | − | − | 0 | + |
| Colon B.... | B. Coli Com ...... | Ford | Stomach Pernicious Anæmia | + | − | + | − | − | + | − | − | − | + | + | + | + | + | + | − | − | + | − | − | + | + | + | − | + | + | + | − | − | + 1.5 | + |
| | B. Coli Com ...... | Harris .... | ? | + | − | + | − | − | + | − | − | + | + | + | + | + | + | + | − | − | + | + | + | + | − | + | + | + | + | − | − | + 1.5 | − |
| | Lactis Aerogens... | Escherich | Normal Duodenum | + | − | − | − | + | + | − | − | − | + | + | + | + | + | + | − | − | + | + | + | + | − | − | + | + | + | − | − | ? | |
| Colon C .. | B. Coli Com ...... | McCrae | Faeces ............ | + | − | + | − | − | + | − | − | + | + | + | + | + | + | + | − | − | + | + | + | − | + | + | + | + | + | − | − | + 1.5 | |
| Colon D.... | B. Coli Com ...... | Ford ..... | Typhoid Spleen... | + | − | + | − | − | + | − | − | − | + | + | + | + | + | + | − | − | + | + | + | − | − | + | + | + | ÷ | − | − | + | |
| Colon E... | B. Coli Com ...... | Ford ..... | Kidney, Rabbit... | + | − | + | − | − | + | − | − | − | + | + | + | + | + | + | − | − | + | + | + | − | − | + | + | + | − | − | − | + 1.5 | |
| Paracolon A | Paracolon Cushing. | Cushing .. | Abscess Rib....... | + | − | + | − | − | + | − | − | − | + | + | + | + | + | + | − | − | − | − | − | − | − | + | − | + | − | − | − | + | + |
| | Paracolon Gwynn.. | Gwynn ... | Abscess of Neck... | + | − | + | − | − | + | − | − | − | + | + | + | + | + | − | ? | ? | − | − | − | ? | − | − | − | ? | − | − | − | ? | ? |
| | B. Hatton ........ | Durham .. | ? | + | − | + | − | − | + | − | − | − | + | + | + | + | + | − | − | − | + | − | − | − | + | − | − | − | − | − | + | + |
| | B. Morb. Bovis.... | Basenau .. | ? | + | − | + | − | − | + | − | − | − | + | + | + | + | + | − | − | + | − | − | − | + | − | − | − | − | − | − | 0 | |
| | Icteroides ........ | Sanarelli . | Yellow Fever Patients ........ | + | − | + | − | − | + | − | − | − | + | + | + | + | + | − | − | + | − | − | − | − | − | − | − | + | − | − | + | 0 | + |
| | Icteroides ........ | Reed ..... | Yellow Fever Patients ........ | + | − | + | − | − | + | − | − | − | + | + | + | + | + | − | − | + | − | − | − | − | − | − | − | − | − | − | − | 0 | + |
| Paracolon B. | Paracolon B....... | Ford ..... | Liver, Rabbit..... | + | − | + | − | − | + | − | − | − | + | + | + | + | + | − | − | − | + | − | − | − | − | − | − | − | − | − | + 1.5 | |
| | B. Cholera Suis ... | | | + | − | + | − | − | + | − | + | − | + | + | + | + | + | + | − | + | + | − | − | − | − | − | + | − | + | − | 0 | + |
| Cloacæ ..... | B. Cloacæ ....... | Jordon .. | Sewage .......... | + | − | + | + | + | − | − | − | + | + | + | + | + | + | + | + | + | + | + | + | + | ? | + | + | − | − | ? | | |
| Paracolon C. | Paracolon C....... | Ford ..... | Liver, Rabbit..... | + | − | + | − | − | + | − | − | − | + | + | + | + | − | −(?) | −(?) | − | − | − | − | − | − | − | − | − | − | + | ? | ? |
| Typhosus... | B. Typhosus ...... | Eberth ... | Typhoid Lesions.. | ÷ | − | + | − | − | + | − | − | − | + | + | + | − | − | − | − | − | − | − | − | − | + | + | − | − | − | + | |
| Paracolon D | Paracolon D ...... | Ford ..... | Stomach and Typhoid Spleen.. | + | − | + | − | + | − | − | − | − | + | + | + | + | + | + | − | − | + | + | − | | |

NOTE.—In preparing the chart which is appended to this paper the special varieties have been ascribed to the investigator who first described them. In separating the different varieties of colon, however, this has been found impossible, hence under the division of "Investigator" has been placed simply the name of the individual from whom the culture used was obtained. The reactions of all the media employed are estimated according to the neutrality to Phenol Pthalein.

# RETROSPECT

OF

# CURRENT LITERATURE.

## Medicine.

### UNDER THE CHARGE OF JAMES STEWART.

### The Nervous Symptoms and Sequelæ of Influenza.

At the recent meeting of the British Medical Association, held at Ipswich, a very important discussion took place in the Section of Medicine on Influenza as it affects the Nervous System.

Dr. Judson S. Bury, of Manchester, opened the discussion. He considers that the nervous disturbances produced by the influenza bacillus and its poisonous products may be broadly separated into two groups. In the first group he places nervous diseases which develop during or shortly after the febrile stage, instancing meningitis and hæmorrhagic encephalitis as the most marked examples of this group. In the second group are included the nervous troubles which are usually met with after the attack has subsided, neurasthenia and multiple neuritis being mentioned as good examples.

It is assumed that the toxins produced by the bacilli are more dilute and less virulent in the second than in the first group, being sometimes sufficiently powerful to initiate degenerative changes in the nerve tissue, whereas in other cases they appear to simply bring about functional disturbances without giving rise to any recognisable anatomical changes.

As a good example of the first group he narrates the particulars of a case of meningo-encephalitis, characterized by headache, pyrexia, and a rapidly developing coma, death occurring a week after the onset of the symptoms. The postmortem showed a hæmorrhagic meningo-encephalitis chiefly affecting the frontal lobes of the brain. Although the presence of the influenza bacillus was not demonstrated in the brain, still Dr. Bury considers that there was strong presumptive evidence, in the absence of disease elsewhere, that the meningitis was influenzal in its origin.

Meningitis may exist alone, but is probably more frequently attended by inflammatory disease in the brain itself. Mention is made of the not

infrequent condition of a meningitis being set up by streptococci or staphylococci in the course of an influenza, sometimes the bacillus of the latter disease being present and sometimes absent. The meningitis may be secondary to a purulent otitis set up by influenza, or to a suppurative condition of the nasal cavities. There would appear to be little doubt that influenza is not an infrequent cause of meningitis and of meningo-encephalitis.

Another cerebral complication of a grave character occurring after influenza is cerebral abscess. Dr. Bury refers to a case occurring in the practice of one of his colleagues, where it was secondary to a collection of pus in the ethmoidal cells consequent on an influenza. An abscess was found in the right frontal lobe and a small-collection of pus in the upper ethmoidal sinuses on the right side. The great frequency of suppurative middle-ear disease during either the course or after the subsidence of an influenza is an every day experience of the practitioner during an influenza epidemic. It is, therefore, not surprising that cerebral abscess now and then follows. The writer, at the late meeting of the Canadian Medical Association, described a case of abscess of the temporo-sphenoidal lobe consequent on a suppurative otitis media coming on during the course of an attack of an influenza. The first definite cerebral symptoms were observed some three months after the influenzal attack. Reference was made by Dr. Bury to cerebral abscess following influenza when no definite suppurative focus of origin was to be met with at the autopsy.

The post-influenzal nervous disorders are very numerous, nearly all forms of inflammatory and degenerative lesions being met with. Not only do we find lesions in the brain and cord, but also in the cerebral and spinal peripheral nerves.

As regards the cord, almost every variety of myelitis or of degeneration of its various tracts may occur. Among the cerebral sequelæ, we meet with the various functional disturbances, as neurasthenia, hysteria, epilepsy, various forms of pyschosis, etc. Among the inflammatory diseases of the cerebrum, we have the various types of encephalitis as well as general and local meningitis. The peripheral lesions include almost every known form of neuralgia and multiple as well as local neuritis.

Particular attention is called by Dr. Bury to the striking peculiarities of the action of the influenzal poison on the bulbar nuclei. Thus, "while, as in diphtheria, there may be paralysis of accommodation associated with paralysis of the palate, there is a greater variety in influenza than in diphtheria as regards the grouping of muscles affected with paralysis. Thus we meet with isolated paralysis of the superior rectus,

or of the internal or external recti, with transitory dilatation of one pupil, with intermittent paralysis of accommodation, with paralysis of both thirds, or both fourths, or of both sixths, or of both sevenths, or with paralysis of one side of the tongue." Recovery is looked upon as almost invariable in these; hence the conclusion that the disturbance is of a functional character, or, at least, due to slight changes.

Dr. Bury concluded his careful paper by narrating a number of interesting cases of nervous sequels of influenza. One case in particular is worthy of mention. It was a form of wide spread atrophic motor paralysis without any sensory involvement.

The patient, a girl aged fifteen years, presented all the symptoms of an influenza at the onset of her illness, the paralysis soon developing, and in a short time after the most profoundly affected muscles presented the reaction of degeneration. The knee jerks were absent and although a year after there was a complete recovery as far as the loss of motion was concerned, the knee jerks did not return.

Such cases are not uncommon. They may be due either to a poliomyelitis or a peripheral neuritis, or both these conditions may be present. It is likely that in the great majority of cases the paralysis is peripheral and not central in origin. Otherwise recoveries would neither be so frequent nor so complete as they usually are.

Dr. Bury and the speakers who followed him pointed to the difficulties in recognising an influenza, and consequently the probability of numerous errors. The diagnosis of influenza is based more on negative than positive facts. The sudden advent of a febrile illness during an influenzal wave is about all the positive evidence usually considered necessary to establish a diagnosis. While our knowledge is so limited we must of necessity be prepared for numerous errors in diagnosis, and consequently in judging of the nature and cause of the complications and sequelæ of febrile diseases.                    *James Stewart.*

# Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

## The Treatment of Simple Fractures,

WILLIAM H. BENNETT. "A Discussion on the Methods at Present Available for the Treatment of Simple (Subcutaneous) Fractures." *British Medical Journal*, Oct. 6, 1900.

Bennett makes a general statement of the present position of the treatment of simple fractures, he having made a collective investigation of the views of about three hundred surgeons in London, the Provinces, Ireland and Scotland.

1. The treatment of simple fractures at present, although less stereotyped than hitherto, is still conducted generally too much upon lines that are traditional rather than rational.

2. The use of splints for long periods is disadvantageous, especially in the form of irremovable appliances such as plaster of Paris and the like.

3. Speaking generally, the earlier movements of the joints above and below the fracture in a long bone are used, the shorter is the time occupied in recovery.

4. The legitimate scope of the operative treatment of simple fractures is limited, and should be confined to cases which are otherwise unmanageable, special cases such as certain spiral and oblique fractures, and certain fractures near joints in adults, notably of the humerus at the elbow.

5. The operative treatment of recent fractures of the patella is by no means so generally satisfactory or so free from risk as published cases would tend to show; and further, in cases in which the separation of the fragments does not exceed one-half or even three-quarters of an inch, as good results for practical purposes are usually obtainable without operation, although less rapid.

6. The use of massage and passive movements immediately in simple fracture, when the circumstances of the patient and of the practitioner admit of it, either in its entirety or with modifications is, in the majority of cases, the best means of effecting a rapid and useful recovery.

7. The tendency of late has been to exaggerate the degree of disability and diminution in wage-earning capacity following upon simple fractures.

8. Although no pains should be spared in obtaining perfect position of the fracture ends, moderate displacement, provided that it is not rotatory, is not necessarily followed by any disability if care be taken by the use of early movements to prevent any matting of the parts around the fracture; in other words, the disability which follows in certain cases in which the position of the united fragments is not ideal is due, not to the bony deformity, but to the adhesion of the soft parts around, which is easily preventable.

9. Having regard to the unavoidable modifications which must be dictated by circumstances, social and otherwise, of the patient, and by the facilities possessed by the practitioner, no one method of treatment for simple fractures can be insisted upon for routine use even in cases in which the local conditions are precisely alike.

### Cubitus Varus.

LEWIS A. STIMSON. "Cubitus Varus or 'Gun-stock' Deformity following Fracture of the Lower End of the Humerus." *Annals of Surgery, Sept., 1900.*

Stimson points out that fracture of the lower end of the humerus in some of its forms is not infrequently followed, especially in the young, by a conspicuous deformity of the limb known as "gun-stock" deformity, which consists in marked permanent adduction of the forearm, and is most apparent when the elbow is in full extension. The most marked clinical feature is the apparently abrupt movement made by the forearm towards the ulnar side as the limb approaches full extension, and the peculiarly ungraceful appearance of the limb in this position. Flexion, extension, and rotation are usually normal. The elbow viewed from behind shows the olecranon prominent and slightly displaced towards the inner side, flattening of the inner side of the elbow, and fulness of the outer side on flexion at a right angle with apparent enlargement of the external condyle below and behind. The author arrives at the conclusion that the close resemblance in a chance collection of six cases, their easy experimental production, and the almost total absence of specimens showing lesions of another kind, justify the belief that the common anatomical cause of cubitus varus is not ascent of the internal or descent of the external condyle after fracture extending into the joint, but that, on the contrary, it is an angular displacement of the entire lower end of the bone after a supracondyloid fracture, or of its lower portion after a fracture which is practically a partial separation of the cartilaginous epiphysis, especially at its outer side. The latter form of fracture seems to be possible only at an early age, not over ten or twelve years, because of the marked relative diminution in the size of the epiphysis as age increases.

Recognition of the displacement ought to be easy by attention to the level of the external epicondyle and head of the radius as compared with that of the internal condyle. Error might arise through mistaking the lower end of the supinator ridge for the external epicondyle, but it could be avoided by seeking the head of the radius and the adjoining edge of the capitellum.

Correction of the displacement could probably be easily made by pressure upwards and outwards against the olecranon in rectangular flexion of the joint, or abduction of the fully extended forearm, and maintenance of the latter position for a week or two would probably be the surest means of preventing recurrence, but it should be combined with confinement to the bed. Full flexion of the joint, which has been recommended of late for the treatment of all forms of fractures in this region, could not be trusted to correct displacement or prevent recurrence, because, in all patients whom he had seen with the deformity, free flexion at the joint was possible. As the deformity does not prevent the attitude, the attitude cannot prevent the deformity. If the convenient attitude of flexion at a right angle is chosen, and especially if the fracture is supracondyloid, pressure upward against the olecranon by a supporting sling must be carefully avoided, because such pressure would be transmitted to the inner half of the fragment, and would tend to produce the deviation which we seek to avoid. The sling should take the weight of the limb at the wrist. In the other, the lower and common form of fracture, the rectangular position might be safely taken if incasement in plaster of Paris was used, and the upper portion of the dressing carried over the top of the shoulder so as to prevent its descent, which would permit, or perhaps even produce, recurrence of the displacement.

### Pedicled Flaps in Injuries of the Hand.

W. E. SHROEDER. "The Value of Pedicled Flaps in Injuries of the Hand." *The American Journal of the Medical Sciences, Oct., 1900.*

The injuries met with in the hand which result in the destruction of the skin and subcutaneous tissues, leaving the tendons and all or some of the bones and joints intact, may in many instances be repaired by judicious treatment. Shroeder points out that the elasticity and resistance required of the skin in the palm of the hand is not furnished by the Thiersch or free-flap method, although both of these methods may be used successfully on the dorsal surface of the hand. Dr. Fenger is credited with having first applied the method described.

The operation consists of several steps. First, after the hand and the hip have been rendered thoroughly aseptic, the hand is placed upon the hip and incisions made in the skin as guides. The anterior and

posterior flap is formed having an anterior and posterior pedicle. The anterior flap passes over the crest of the ilium. The denuded hand is placed in position in the pocket and the upper and lower flaps united, as well as the lower border of the lower flap, to the fingers and the upper border of the upper flap to the edge of the skin of the wrist. It is important not to take too much subcutaneous tissue in the flap and to avoid all tension on the pedicles. The edges of the skin of the hand must be undermined for at least one-quarter of an inch so as to allow of easy approximations. Large quantities of gauze dressings are placed over the hand, and a plaster cast is applied, extending from the shoulder to the gluteo-femoral fold. At the end of three days a trap-door is cut in the cast and the dressings changed. The remaining steps are to separate the inner pedicle on the eighth day, and the outer pedicle on the sixteenth day, and if necessary later to unite the bridges of flap between the fingers. The wound on the hip is scraped and covered with Thiersch's grafts. The advantages claimed for the method are :—mobility, elasticity, and certainty of taking.

# Ophthalmology.

UNDER THE CHARGE OF FRANK BULLER,

## Lesions of the Visual Tract in Diseases of the Nervous System.

C. O. HAWTHORNE. "Eye Symptoms of Locomotor Ataxia and Clinical Record of Thirty Cases." *British Med. Jour., Mar. 3, 1900.*

CARL KUNN. "Disassociated Paralysis of the Eye Muscles in a Case of Tabes." *Wein. Klin. Wochen., April 12, 1900.*

C. A. OLIVER. "Clinical Study of the Ocular Symptoms found in so-called Posterior Spinal Sclerosis." *Amer. Jour. Med. Sciences, July, 1900.*

WARD A. HOLDEN. "Sequences of changes in the Optic Chiasm produced by Acromegaly in Three Cases." *Archives of Neurology and Pyscopathology, Vol. II., 1899.*

Hawthorne's deductions are :—

(1) Optic nerve atrophy, an ocular paralysis, or an Argyll-Robertson pupil, may exist as an isolated symptom presumably for years.

(2) Any two of these symptoms may exist together with a correspondingly increased presumption that locomotor ataxia is their cause.

(3) That any one of the three symptoms, or a combination of any two, or of all three, may exist with a varying degree of evidence of spinal disease.

(4) That occasionally a case which commences with purely ocular symptoms may develop with comparative rapidity characteristic symptoms of the spinal lesions of locomotor ataxia.

Kunn's case is interesting in that, although the patient had paralysis of the right internal rectus, he was able to use the right eye for fixation. On looking to the extreme right the left eye turned inward to about the normal limit, the right eye remaining quiescent in the outer angle of the orbit, the left eye then returned slowly to the median line or slightly upward or downward. These movements of the one eye independently of the other, show a disassociation in the movements of the two eyes. Kunn has seen this also in six other cases of tabes.

Oliver's article is an elaborate resumé of the ocular symptoms found in the various stages of posterior sclerosis.

Holden's reports of his cases of acromegaly are very instructive. He finds that at first the enlargement of the pituitary body compresses the

posterior portion of the chiasma, and then flattens and forces upward the middle portion of it, the anterior portion of the chiasma, being protected by bone, at first escapes. Later, by the forcing forward of the anterior wall of the pituitary fossa, the anterior portion of the chiasma is encroached upon by the pituitary body and arched directly forward. Finally the chiasma may be divided completely.

The glandular enlargement of the pituitary body in acromelagy always remains within its capsule and never penetrates the chiasma, as malignant tumours of the pituitary body may do. Hence the pressure on the chiasma is diffuse, and the resulting degeneration in the chiasma need not be exactly at the seat of pressure. Further, the increased pressure may interfere with the function of large portions of the chiasma, but often only slightly, so that the defect in the visual field is not absolute, but for colours only.

There may be much variety in the shape of the fields. If the pituitary body be enlarged symmetrically, the chiasma will probably be compressed posteriorly and flattened out laterally. With diffuse pressure on the chiasma in its entire lateral extent, there will probably be concentric contraction of the visual field; but if the median portion of the chiasma is the more compressed, as is frequently the case, the crossed fibres of the chiasma will be mainly interfered with and, as a result, there will be bitemporal hemianopsia.

If one side of the pituitary body enlarges more than the other, for a time, one tract alone may be compressed, causing homonymous hemianopsia. Again, the atrophy in one optic nerve may differ from that in the other, because one has been compressed against a rigid anterior cerebral artery whilst the other has been compressed against soft brain matter.

Broca believes that the optic nerve may be compressed by a contracted optic foramen, and in one of Holden's cases the foramen was contracted, but there were no signs of pressure on the nerve.

Finally, optic neuritis is sometimes present and the nerve fibres may be compressed as a result of an interstitial neuritis, but neuritis was not present in any of Holden's cases.

Two hundred cases of acromegaly have been reported, and in fifty per cent. of these disturbances of vision were present. In more than fifty per cent. of these with visual disturbances, there was a concentric limitation of the visual field; and in somewhat less than fifty per cent. there was bitemporal hemianopsia, absolute or for colour only, with or without some contraction of the nasal portions of the field. In less than a dozen cases there was homonymous hemianopsia, and in one case

there was found a typical nasal hemianopsia. The type of contraction often changes as the disease advances.

### Eye Changes in Cardiac Disease.

VALUDE. " Visual and Ophthalmoscopic Changes of Cardiac Origin."
*Annales d'Oculistique, March, 1900.*

Valude reports the case of a man suffering from hypertrophied heart without any valvular lesion. The face was cyanosed and the conjunctivæ were yellowish-red with marked pericorneal injection. The urine contained neither sugar nor albumin. Vision was reduced to one-half the normal in the right eye, and one-twentieth the normal in the left eye. There was no refractive error. The retinal veins were variocose with some dilatation of the corresponding arteries. The veins were so dilated that they covered nearly the whole ophthalmoscopic field. Vision varied somewhat, although it was always better in the right eye. After the lapse of a month the patient died.

The autopsy showed a dilated heart with thickened and sclerosed walls but no valvular lesion. The thoracic and abdominal viscera exhibited the characteristic changes due to the cardiac condition. The brain was greatly congested, the veins being dilated and tortuous.

A blood discoloured spot was found around the fissure of Sylvius and the angular gyrus on both sides, extending in one direction towards the occipital lobe and in the other towards that portion of the frontal lobe which lies under the anterior ascending frontal convolution. These portions of the brain were almost black from extravasated blood, although the entire surface of the organ was of the colour of wine dregs.

On section of the brain, particularly in the right hemisphere, the grey substance corresponding with the angular gyrus was of a violet colour, due to petechial hæmorrhages. The regions of the occipital and ascending frontal convolutions were thus marked but to a less extent. There was no change in the striated bodies or in the optic tract. The ventricles were normal.

Valude considers the lowered visual acuity as due to the central lesions.

### Lachrymal Apparatus.

DONALD GUNN. "Lachrymal Obstruction in the young." *Ophthalmic Review, February, 1900.*

VEILLON AND MORAX. " Gangrenous Pericystitis." *Annales d'Oculistique, March, 1900.*

ROLLET. " Prelachrymal Tumours and their Treatment." *Ibid, May, 1900.*

RICCHI. "Bacteriological Researches of some Lachrymal Tumours." *Annali di Ottalmologia, XXVIII, No. 1.*

DU GOURLAY. "Treatment of Lesions of the Lachrymal Apparatus by Electricity." *Annales d'Oculistique, May, 1900.*

STEINITZ. "Treatment of Suppurative Dacryocystitis with soluble bougies." *Klin. Monatsblätter f. Angenheilkunde, May, 1900.*

STEPHENSON. "The Place of Protargol in Eye Work." *Edin. Med. Journal.*

Mr. Gunn considers lachrymal obstruction to be most common in adults past middle life and in young children. In the former, an obvious cause is often not to be made out, whereas in children it is very commonly traceable.

In newly born infants with lachrymal abscess, the dilatation of the sac must have occurred during intra-uterine life, but as the lump which is noticed at birth does not inflame for a week or two later, after infection has occurred, Gunn regards the condition as one of congenital mucocele.

Some of these infantile cases show on probing the presence of a large cavity occupying the position of the lachrymal duct, filled with an excessive amount of mucopus. The cavity is really the dilated duct, the dilatation being due to obstruction of its orifice during foetal life.

As to the nature of the obstruction; there may be an imperforate condition of the mucous lining of the duct where it enters the nasal cavity. The cartilages representing the lachrymal, superior maxillary and inferior turbinated bones may be at fault. Finally, certain small cartilages in the foetal nose, which normally disappear, may remain and act as an obstruction.

As the secretion of tears is probably very slight in the foetus, the contents of the cavity must be mainly the secretion of the mucous and acinous glands of the sac and duct.

Mr. Gunn groups the cases into :—(1) those in which the trouble was present at birth or soon after; (2) those in which there was no symptom of lachrymal trouble for the first few years, but in which lachrymal abscess developed later on. In the first group there are two types of cases; one in which the obstruction has been present at or before birth and there is often a cavity, and the other type where the symptoms develop a little later, generally associated with a conjunctivitis, but in which there is no dilated duct. In the second group there are also two types of cases; the one occurring in syphilitic children, and often associated with interstitial keratitis; and the other in cases of tuberculous disease of the bones of the nose or orbit causing the obstruction.

As to the treatment; those with membranous occlusion rapidly re-

cover after slight probing, but in those having cartilaginous occlusion, a stylet had better be left in, the stylet being of lead wire the lower end of which is drawn out of the nostril and turned up over the alæ nasi. In the second type of the first group, the treatment was repeated emptying of the sac by pressure together with instillation of chloride of zinc. The treatment of the second is most unsatisfactory.

Veillon and Morax report a case of pericystic abscess with great swelling of the lids, high temperature, and septic intoxication symptoms. The abscess broke, and in a few days a sphacelus was discharged. The case slowly recovered, but before cure was effected, two small exostoses appeared at the level of the canal; these were rapidly absorbed. Three organisms were found, one a streptococcus of aërobic type and two of anaërobic nature.

Rollet divides the lachrymal tumours into two classes, one of which communicates with the lachrymal sac, the other does not. He compares them to fistula in ano or a perivesical tumour. The first group he treats by extirpation of the sac, the second by incision and curetting.

Ricchi, as a result of the bacteriological examination of twelve cases of lachrymal abscess, found mainly the pyogenic organisms proper to putrefaction, and in a later case, the Actinomyces albus. In two others he found the Saccharomyces albus and the Saccharomyces minor.

Dr. Gourlay employs electricity in two ways. (1) The constant current, as in electrolysis for the treatment of stricture and dilatation of the sac; the stopping of catarrhal and purulent secretion; and in greater intensity, for cauterization; (2) the induced current as a muscle stimulant. He reports fifty cures out of sixty cases, and only one complete failure.

Steinitz uses cacao butter bougies, 3 mm. long and 1 mm. thick, impregnated with a drug, generally 5 per cent. protargol, and argentum colloidale, 1 per cent. The bougie is introduced through a silver tube, 1 mm. in diameter.

Stephenson slits the lower canaliculus in dacryocystitis and washes out the dilated sac with a 5 to 10 per cent. solution of protargol, until no pus returns with the fluid. Probes are passed at the same time to dilate the stricture.

### Potassium Iodide and Pilocarpine in Eye Diseases.

BURNHAM. "Successful Treatment of Important Cases of Diseases of the Eyes by the Combined Method of Hydrargyrum and Potassium Iodide Internally and Pilocarpin Externally." *Canadian Practitioner*, Oct., 1900.

Dr. Burnham's cases were: (1) a chronic iridocyclitis of two and a half years' duration with relapses and bound-down pupil, with masses

of exudation in it. (2) Chronic iritis with posterior synechia and lymph in the pupil. (3) Specific paralysis of the motor nerves of the left eye of four years standing.

Burnham uses the drugs in specific and non-specific cases. The pilocarpin is given in $\frac{1}{12}$ to $\frac{1}{4}$ grain doses, hypodermically, for from 6 to 21 days, once daily, unless there be nausea, headache, or oppression over the heart, when he desists for a few days. This is repeated after an interval of three to eight weeks. The patient remains in bed for two or three hours after the injection, a profuse flow of perspiration and saliva following. Treatment is continued as long as any improvement is noted, even for three or four years.

### Colour Blindness.

ELDRIDGE-GREEN. "Inefficiency of the Board of Trade Tests for Colour Blindness." *Lancet, May 26, 1900.*

The author holds that any tests to be efficient must be based on the facts of colour blindness, not on any theory. He claims that Holmgren's test is not efficient. The person tested should pick out the colours as colours and not as shades, and he need only know the names of the fundamental colours, red, yellow, green, and blue. A man who names a green light as red must either be colour blind or very dangerously ignorant of colours. Again, a person with central scotoma will escape detection by the Holmgren test, and as a light at a distance occupies a central portion of the field of vision, these persons will be found to recognize colours when close to them but not when they are at a distance.

Mr. Green uses two tests, the first being the classification test, the other the lantern test. The former consists of four test colours and one hundred and eighty confusion colours. The lantern test consists of a lantern containing thirteen slides, seven slides containing coloured glasses, and six containing modified glasses. These reproduce rather closely the conditions under which marine or railway employees would have to distinguish the colours, and detect any case of central scotoma.

### Blue Blindness in Granular Kidney.

GERHARDT. "Blue Blindness in Granular Kidney." *Annals of Ophthalmology, July, 1900.*

Gerhardt draws attention to the discovery of König's of the presence of blue blindness in granular disease of the kidney.

## Trachoma.

MASSELON. "The Jequirity Treatment." *Die Ophthal. Klinik, May 20, 1900.*

A. SCHIELE. "Iodic Acid, Gallican and Iodogallican in the Treatment of Trachoma." *Centralblatt f. prakt. Augenheilkunde, April and May, 1900.*

BOECKMANN. "Trachomatous Pannus and Periectomy." *Amer. Jour. of Ophthalmology, April, 1900.*

ADLER. "More Recent Methods of Treatment of Trachoma." *Wiener Med. Presse, Feb. 11, 1900.*

Masselon regrets the diminished use of jequirity in trachoma. The drug should only be used where there is but little secretion and, as it acts especially on the cornea, it is indicated in pannus and sclerosing opacities of the cornea. The lids should be everted and the exposed *cul-de-sacs* pressed together, so that the cornea is completely hidden; a layer of freshly prepared powdered jequirity freed from all oil is now dusted on the exposed conjunctiva, and it is left on from two to five minutes. The lids are now carefully cleansed with a swab of boracic acid solution. This treatment may be repeated in a few days time, if necessary, but it is better to get a marked reaction on the first application rather than to repeat with several weak reactions, as a certain degree of toleration seems to arise after the first application.

Schiele uses iodic acid in stick form, applying it to the granular areas after instilling cocaine. The mucosa becomes dry and brown, but no scars are left. He also applies 5 per cent. of iodic acid with a brush or instills a 1 to 3 per cent. solution. In pannus, he uses iodic acid as a salve of 1½ per cent. strength. The internal administration of potassium iodide assists. Treatment is kept up until recovery results, in say, one to two months, and in the dry cases for a longer period.

Gallican is a white powder soluble in hot water, and is dusted over the affected areas once or twice daily. It is especially indicated in beginning trachoma and in the cicatricial stages.

Iodogallican is a dark gray powder insoluble in water and contains bismuth, 38.4 and iodine 23.6. It is used in powder form and is slightly caustic. It is indicated in superficial and deep infiltrations of the cornea, and heals up an ulcer, probably, partly due to its drying effect upon the floor of the ulcer, and partly to its antiseptic action. Marked irritative symptoms contra-indicate its use.

*J. W. Stirling.*

# Obstetrics.

## The Etiology and Nature of Puerperal Infection.

Thirteenth International Congress of Medicine, held in Paris, August 2-9, 1900. Section on Obstetrics.

Drs. Doléris of Paris, Menge and Krönig of Leipzig, and Pestalozza of Florence, presented important and valuable communications on this subject.

M. DOLÉRIS stated that Pasteur determined the fact of the microbic nature of puerperal septicæmia. The ordinary pathogenic germs of puerperal septicæmia are :—the streptococcus pyogenes (the most common), the staphylococcus aureus, the gonococcus, the bacterium coli commune, etc. The germs may be anaërobic or mixed. It is generally admitted that certain anaërobic saprophytes can develop and act like true pathogenic germs in the presence of favourable conditions, such as is the case in retention of portions of placental tissue. When different species are associated, infection is more certainly produced.

Puerperal infection generally kills by toxæmia, but the lesions produced may also contribute to the production of death, as is the case in hyperacute peritonitis resulting in intestinal paralysis.

The staphylococcus aureus may cause death by visceral metastases to the pericardium, pleura, kidney, etc. The gonococcus, the colon bacillus, the bacillus of diphtheria, and the pneumococcus, may exceptionally produce puerperal infection, but their active rôle in the production of puerperal lesions is confirmed by the production of many abscesses. Their rôle in the production of septicæmia is less well established. Doléris concludes that generally the infection is heterogenetic. He considers that occasionally the infection may be autogenetic, on account of the possible pre-existence of pathogenic germs in the secretions of pregnant women. He feels bound to admit reviviscence *in situ* of these pathogenic germs pre-existing in the uterine cervix and Fallopian tubes, and the possibility of such an infection becoming generalized after confinement without any fresh importation of pathogenic germs from without. Therefore he is disinclined to abandon the local application of the antiseptic method *præ partum* and *per partum*.

DR. KRÖNIG defined puerperal fever as a disease following confinement, in which pathogenic bacteria, starting from wounds produced during labour, resulted in damage to the organism. An elevation of

temperature above the normal point invariably accompanies such an infection.

Among pathogenic bacteria it is not possible at present to distinguish between those which act solely in virtue of their toxic properties, and infectious bacteria which have the property of penetrating into the tissues of the organism. Krönig states that at present the bacteria which may be considered as capable of giving rise to puerperal fever are :—streptococcus pyogenes puerpalis, staphylococcus pyogenes aureus, gonococcus Neisser, bacterium coli, bacillus diphtheriæ, diplococcus pneumoniæ, and various bacteria, obligate anaërobes, whose biological properties differ essentially from those of pathogenic bacteria.

While not much is at present known as regards the action of these anaërobic bacteria, the theory that the clinical and marked phenomena of puerperal fever may be caused by the absorption of the products of their nutritive activity (sapræmia), must be questioned. In his opinion, sapræmia without penetration of the bacteria into the tissues, is rare. Recent observations have established that saprophytic anaërobic bacteria may, by their penetration into the tissues, cause the death of a puerperal woman.

We are met with insurmountable difficulties in the endeavour to determine the degree of virulence of the bacteria which give rise to puerperal fever. Experience has demonstrated that, generally, virulence is diminished when the bacterium concerned has remained for some time in a saprophytic state.

Besides a general predisposition to puerperal infection, a local predisposition exists in the case of insufficient hæmostasis in the genital passages, or in the case of extensive lesions of the genital organs. The primary infective process may be situated in the wounds of the perineum, vagina, cervix, and in the whole endometrium, remain localized there, or else spread by continuity, or by metastatic infection. This extension most frequently occurs when the endometrium and the placental site are affected. Rarely, infection arises in infected wounds of the cervix; most rarely, it starts from infected wounds of the vagina and perineum. The blood vessels and lymph canals are almost as often utilised in the propogation of infectious microbes in the organism. The staphylococcus pyogenes puerperalis has the greatest tendency to overstep the limits of the primary focus, though the majority of cases of infection by this micro-organism limit themselves to the endometrium, or tend to get well of themselves.

Menge, who agreed with Krönig as to the bacteria generally concerned in puerperal infection, stated that the infection caused by these bacteria may be heterogenetic or autogenetic. Autogenetic infection,

he defined as an infection produced by pathogenic bacteria that have lived in the condition of saprophytes before labour on the integuments of the external genitals, or in the genital canal of the woman, and which during labour, or immediately after it, invade the organism through puerperal wounds and set up disease. Heterogenetic infection, on the other hand, is an infection produced by pathogenic bacteria, carried by the air, by instruments, or by the hands of persons in attendance, to the puerperal wounds, and thence infect the organism.

Menge considers that puerperal fever due to infection by the gonococcus, having as its starting point a urethral, vaginal, or vesical gonorrhœa, should not, any more than the infection of puerperal wounds proceeding from the blood or infectious foci situated on the external and internal genital organs before confinement, be counted among autogenetic puerperal infections, because in these cases the infectious agent has not a saprophytic character. It is a case simply of the expansion of an infectious process pre-existent in the body.

As the streptococcus pyogenes puerpalis, staphylococcus pyogenes aureus, the bacterium coli, the gonococcus Neisser, the bacillus diphtheriæ, and the diplococcus pneumoniæ, do not live in the condition of saprophytes in the vaginal secretions of pregnant women, an autogenetic infection by these bacteria cannot have as a starting point the vaginal secretion of such women. He considers that an autogenetic infection, produced by anaërobic bacteria of puerperal fever coming from the vaginal secretion, is improbable. Still it cannot be absolutely rejected, because we have not as yet succeeded in distinguishing the anaërobes of puerperal fever from the saprophytic anaërobes of the vaginal secretion of pregnant women, in regard to their biological properties.

Clinical facts seem to warrant a favourable prognosis, when the infection is autogenetic and arises from infection by pathogenic bacteria that have lived as saprophytes on the skin of the external genitals. While it cannot be denied that pathogenic bacteria, starting from the integuments of the external genitals, may after confinement find their way even into the uterine cavity, still an autogenetic infection produced by bacteria that have lived as saprophytes in the cervical canal, or in the uterine cavity, or in the tubes, can be absolutely rejected, for these organs never contain bacteria in the condition of saprophytes.

While autogenetic infection may be to a certain extent be disregarded, heterogenetic infection must be regarded as of the highest importance. The factors of importance in an infection are the virulence of the infective germs, the predisposition of the infected individual, and the number of the infective agents. The air, which is poor in germs, plays

hardly any part in the production of a heterogenetic puerperal infection. When the instruments have been sterilized, the hands of persons in charge of the confinement become the essential carriers of the infective agents. Menge recommends as prophylactic measures the employment of sterilised rubber gloves for obstetrical examinations and operations, and the limitation of internal exploration. He also suggests that the accoucheur should be limited entirely to obstetrical practice.

PESTALOZZA gave an analysis of the results obtained in the obstetrical clinic of Florence, during the five years from 1895 to 1899, comprising a total of 4015 women. In 1895, disinfection of the vagina in a healthy woman in labour was discontinued.

There were delivered 3847 women in the lying-in department in the five years. These were not subjected to prophylactic disinfection of the vagina, or to vaginal or uterine injections after confinement, even in cases of artificial delivery. Those measures were reserved for very rare cases of women on whom suspicious manipulations or examinations had been practiced before admission. Of the women admitted to the lying-in department, 32 had to be transferred to the isolation pavilion, on account of infectious symptoms of gravity; and these were for the most part women in whom labour had begun some time before admission. Of the 32 so transferred, 30 were discharged cured. To the isolation pavilion, there were admitted 168 women, after having been delivered outside; of these 25 died.

The results of the author's clinical, anatomical and bacteriological researches on 200 women in the isolation pavilion, led him to the following conclusions:—

(1) The aseptic course of the puerperium depends upon the rigorous application of procedures of disinfection of the external genital organs of the woman, and of the hands and instruments of the obstetrician.

(2) Disinfection of the vagina of a healthy woman in labour is to be condemned as superfluous and dangerous.

(3) In cases where doubt as to the aseptic condition of the vagina is justifiable, i.e., in women suffering from infectious disease of the genital apparatus, the best thing to be done is to abstain from vaginal examination during delivery.

(4) Disinfection of the vulva of the patient and of the hands of the obstetrician, is sufficient to obviate all possibility of infection during delivery, but there remains the possibility of a puerperal fever arising from intoxication (sapræmia).

(5) An antiseptic system properly managed should also include precautions necessary to limit the possibility of putrid intoxication. That is to say, the prevention of the premature rupture of the amniotic sac,

the union by immediate suture of every vulvar, vaginal, and cervical wound, and, especially, careful assistance during delivery, to the exclusion of all premature manœuvres of intervention. This is the best means of avoiding the retention of shreds of membrane, placental fragments, and blood clots, which would present too favourable a soil for putrefactive processes.

(6) After labour, all vaginal or uterine injections should be abstained from. A large number of cases of infection must be referred to the imprudent use of these measures.

(7) Should the phenomena of infection develop, it is of the greatest importance to obtain an exact knowledge of the point of entrance of infection; that is to say, whether there exists a vulvar, vaginal, cervical, or uterine infection, or a combination of these. The practice of immediately having recourse in every case of fever to uterine injections, is strongly to be condemned. There is reason to believe that they very often give occasion to extension of the infective process. Especially in cases where there may seem to be ground for the suspicion that the assistance has been inperfect, from the point of view of antisepsis, one must satisfy oneself as to the condition of the cervix uteri. All treatment of the infection should also be preceded by a careful diagnosis of the point of entry of the infection. This diagnosis, in the present state of knowledge, is of much greater importance from the practical point of view than the diagnosis of the nature of the infectious germs, a matter which is still surrounded by too many difficulties.

(8) Bacteriological researches confirm the fact of the frequent occurrence of streptococcus infection. The streptococcus is the only agent which the author has been able to discover in cases of puerperal peritonitis or in metastatic foci. As for staphylococcic infection, he has been able to find it only in the form of multiple abscesses in the substance of the uterus (cases of criminal abortion).

Bacterioscopic examination is not always sufficient, because there are forms of streptococci anaërobic in development, that are often met with in forms of sapræmia, and which have not manifested any pathogenic property. The B. coli has not been found by the author, except in cases of intrapartum fever arising from decomposition of the amniotic fluid.

Lastly, there are cases that might seem to establish the possibility of diplococcic infection. In all probability, however, in such cases there exist forms of sapræmia, or else the transport of decomposed fragments of thrombus has prepared the soil for growth of the diplococci which were on the wound.

*D. J. Evans.*

# Reviews and Notices of Books.

A HANDBOOK FOR NURSES. By J. K. WATSON, M.D., Edin., Late
   House-Surgeon, Essex and Colchester Hospital, etc. American
   Edition, under the supervision of A. A. Stevens, A.M., M.D., Pro-
   fessor of Pathology in the Woman's Medical College of Pennsyl-
   vania, etc., etc. Philadelphia, W. B. Saunders, 1900. Canadian
   Agents, J. A. Carveth & Co., Toronto. Price, $1.50.

This is the American edition of a book which appeared last year in
England, its publication on this continent being supervised by Dr.
Stevens, of Philadelphia.

It is divided into four parts, the first of which deals with anatomy
and physiology. The subject is presented in such a manner as to be
easily understood by a beginner, while at the same time it contains all
that is essential for a nurse to know in this connection. The second
part opens with a chapter on "The management and nursing of the
sick," in general, the daily routine of both hospital and private nursing
being described in a clear and concise manner. While it is impossible
to notice each chapter in detail, those upon operations, bandaging, and
emergencies are especially to be commended. Part third describes the
special nursing required in disease of the various systems, a chapter
each being devoted to the respiratory, circulatory, digestive systems,
etc. Part four contains a chapter upon child-birth and the care of the
lying-in woman, and one on gynæcological cases. There is also an ap-
pendix describing the appliances with which every nurse should be
familiar, such as the cold pack, ice bags, etc.

The book is neatly bound, printed on good paper, and contains
numerous illustrations in the text. A special feature is that the head-
ings of paragraphs are printed at the margin in black type, thus en-
abling ready reference to be made to any subject. There are a few typo-
graphical errors which can be corrected in a later edition.

Taken as a whole, the work is well qualified to supply the place for
which it is intended and we predict that it will have a ready sale. We
have much pleasure in recommending it as a thoroughly reliable text-
book.

# Society Proceedings.

## MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The Thirtieth Annual Meeting, October 5th, 1900.

The retiring President, Dr. J. G. Adami, occupied the chair.

The minutes of the last annual meeting were read and confirmed.

The Secretary, Dr. A. J. Bazin, reported that 19 regular meetings had been held during the session, the average attendance being 28, the largest number present at one meeting, 47. Eight new members had been enrolled, making the total 161; this, with 27 temporary members, made a grand total of 188. During the year the society lost two members by death, Drs. T. D. Reed and Charles O'Connor.

The routine work of the session comprised 92 items; 3 general discussions had been held, 13 papers and 24 case reports presented, 11 living cases and 40 pathological specimens shown. In addition to this, the society had been engaged in business of more public character, consisting of the formation of a medical defense association, the compilation of a Canadian Addendum to the British Pharmacopœia, and the providing of hospital accommodation for infectious dseases in the western portion of the city. A milk commission has also been created by the society.

The Treasurer, Dr. J. M. Jack, read the annual report, showing that the receipts for the year were $666.54 and the expenditure $329.75, which, with the cash balance of the previous year, left a balance of $527.16 on hand. After deducting all outstanding liabilities, the nett assets of the society amounted to $1,232.16.

In moving the adoption of the report, the question of obtaining a permanent home for the society was brought up, and Dr. Buller offered to subscribe $100 a year for five years towards this object provided any other member would do the same.

The following officers were elected for the session 1900-01:—

President—Dr. Jas. Perrigo.

First Vice-President—Dr. J. W. Stirling.

Second Vice-President—Dr. J. G. McCarthy.

Treasurer—Dr. J. M. Jack (re-elected).

Secretary—Dr. A. J. Bazin (re-elected).

Librarian—Dr. F. A. L. Lockhart (re-elected).

Council—Drs. J. G. Adami, J. M. Elder, and F. Buller.

Dr. McCarthy having taken the chair, Dr. Adami read the retiring President's annual address, of which the following is an abstract:—

## President's Address.

It is customary in our Society that, following upon the report of the Secretary upon the year's work, the President also reviews the proceedings of the Society during the past session. Necessarily in such a review there is a danger of repetition—it, however, is of undoubted use as affording opportunity for calling fuller attention to certain of the features of the Secretary's report which may stand a fuller treatment than that allowed by the statistical character of what the Secretary brings before us. For example, the mere statement that so many papers have been read, so many discussions held, so many living cases and pathological specimens brought forward before the Society, while it is true pointing to the continued activity of the Society, does not indicate the quality of the material brought before us.

It is well to have this opportunity of pointing out that the quality of material brought up, not only has been equal to that in previous sessions, but is an indication that our profession here in Montreal is even more active in medical and surgical work than ever. We have for example, Dr. Shepherd bringing before us the first case of Blastomycetic dermatitis recognized north of the border; Dr. Armstrong has published to us the results of his studies and operations upon gastric ulcer, in the operative treatment of which condition he is one of the pioneers; Dr. Finley has reported what I believe is the first case of perforative œsophageal ulcer recognized here. Dr. Bell has brought forward cases of laryngectomy, in which operation he, again, is one of the pioneers in Canada, while we have been shewn material of the first case of antinomycosis in man recognized in this country, in a patient under the same surgeon.

Yet other contributions showing the same activity and advance in medical observation and treatment, have been, Dr. Elder's paper upon Electrical Burns—a subject as yet little written about—one which in the increasing employment of electricity, demands increased study; Dr. Evans' thoughtful and suggestive paper upon the Etiology of the Nausea and Vomiting of Pregnancy, in which he has harmonised and explained various physiological and pathological phenomena in a way which I am glad to say is being most favorably received by gynæcologists elsewhere; Dr. Wyatt Johnston's paper upon Disability and Disease due to Accident, in which he has introduced to the profession upon this side the remarkable work that has been accomplished in Germany of late years in estimating the money value and compensation necessary for diseases and injuries acquired by workmen and others as a result

of accident. His tables will be of especial value to those called upon to testify or advise upon the extent of disability set up by various injuries and the compensation to be allowed for the same.

It is hard with so much good material before us to select and specially mention several contributions, but I think that I ought to call attention to the valuable studies of Drs. Martin and Harvey Jones upon the Existence of Renal Casts without Albuminuria—to Dr. Shirres' singularly full studies upon a case of Porencephaly and the resulting tracts of degeneration—to Dr. England's remarkable case of the successful treatment of traumatic Rupture of the Rectum—and to Dr. Garrow's cases of ligature of the right common carotid for aneurysm.

The contributions that I have thus selected demonstrate, if anything be needed to demonstrate, the fact that our profession here in Montreal is accomplishing sound work in the forefront of medical and surgical advance.

The two discussions held—upon Gonorrhœa and upon Life Insurance —brought forward other able contributions from a large number of the members. The pity is that the papers contributed by those opening the subjects did not elicit quite so much discussion as we have had on previous occasions. Here I would point out the very great difficulty which your Council find in choosing subjects which shall promote discussions which shall be of general interest and shall excite active and speaking interest on the part of the members generally.

Turning now to the other work accomplished by the society I may point out that very many subjects have been taken up, notably, on Medical Defence, on providing an Infectious Hospital for the west end of the city and district, and upon Milk Inspection. Upon this last I need here say nothing inasmuch as I hope that Dr. Williams, the Secretary of the Milk Committee, will report progress to the Society.

With regard to Medical Defence we brought this subject before the annual meeting of the Canadian Medical Association and a committee has been appointed to report upon the subject at their next meeting in Winnipeg. The matter of the Infectious Hospital is still in debate, everything depending upon what the Town of Westmount decides to do. If the town be willing to build a hospital of suitable size, your Council, acting upon instructions received from you, have told the authorities there that the society will be willing to do what it can to interest the householders of Montreal in the matter.

Certainly the amount of routine business that has been brought before the society during the last two years, has been more than the society can well accomplish, and I can cordially sympathise with those members who feel that we have undertaken too much, I recognise that all

this business, brought on as it has been at the end of the meetings when the members have already had a long sitting, has been objectionable and is possibly one of the causes why the attendance has tended to fall off. This may indeed, be one of the causes. Nevertheless it has been extremely difficult to lessen that business. Your Council has striven to cut the business part of the proceedings to the very smallest possible volume. It has, however, been extremely difficult to refuse to consider these matters of professional or public interest brought before us.

I can only suggest that in the future when in the course of the regular scientific work of the society or otherwise, matters are brought up upon which the society feels it should take action, those matters be referred back to the Council with instructions not to come before the society until everything in connection with such matters has been cleared up, or in other words that the Council be given fuller powers to carry on the business of the society. Secondly, the undoubted discomfort of the seats and the relative misery in which members found themselves during the meetings, has, I cannot but think, been a serious factor. Members were willing to stand the discomfort for one year but not for two. In the third place, the amount of business, as already indicated, may have had something to do with the matter, and in the fourth, the late notification of the programmes.

But here let me say that for this late distribution I cannot hold the secretary to blame. It has been the fault of those who, having promised contributions, have at the last moment failed to fulfil their promises. At nearly every meeting last term, the secretary found himself at the last moment through this conduct on the part of contributors, obliged to telephone or rush round in order to fill up the programme.

There remains the pious duty of calling to mind the loss sustained by the society in the death of one of its most constant and most interested members, the late Dr. Thomas D. Reed. Few members attended so regularly, few showed themselves so widely read in the by-paths and even the main paths of medicine than he did, and for years he served the society officially as its honorary librarian. We miss his nervous manner and his familiar face at our meetings. In the late Dr. C. O'Connor we have with equal suddenness lost one of our younger members who had before him a future full of promise.

Lastly, I cannot sit down without cordially thanking the other officers of the society for the aid given during the past session. No one can have had a better and more energetic secretary to do all the hard work of his office, than I had in Dr. Bazin, and I doubt if any medical society on this continent possesses a more business-like and capable treasurer than Dr. Jack has for many years shown himself to be.

## THE TEACHING OF HYGIENE TO MEDICAL STUDENTS AND TO THE PUBLIC.

The remarks of Dr. E. P. Lachapelle upon this topic in another page tend to show the increasing importance which is being attached to this branch of medicine. We would especially emphasize the view he maintains that every practitioner has to know not only his hygienic duty towards his patient, but also towards the public as well. The result of successful hygienic teaching in any country should be apparent in the lowering of the death rate and disease rate. To effect this every physician has not only to know the subject himself, but to spread his knowledge amongst his patients and the public, hence the necessity for a thorough college training in this branch.

As an instance of what may be done in the way of educating the public, we may mention that in the English town of Brighton over 80 per cent. of all cases of contagious diseases are treated in the municipal hospital. Education of the public by medical men in the surest means of carrying out successfully and reaping the benefit of those measures, for the immediate execution of which we look to the public board.

Dr. Lachapelle has had every opportunity of studying the question both as a sanitarian and a teacher of hygiene, and his counsel will merit

attentive study by practitioners equally with the students to whom it was directly addressed.

With us, specialists in hygiene hardly exist as yet as a class, and it is mainly upon the general practitioner that the burden of preventive medicine rests.

## THE PLAGUE AT GLASGOW.

Now that the small but alarming epidemic of plague at Glasgow has come to an end, it is of use to review the circumstances connected with it, thereby to gain some knowledge which might be of aid should the plague break out in any of the cities on this continent. For we may take it that conditions in Glasgow are very similar to those present in the larger cities on this side.

The epidemic broke out on the 3rd of August. Two individuals, a child and its grandmother, sickened suddenly, the child dying in four the grandmother in six days. There had been no recognisable connection between the individuals or families to which they belonged and any previous case of the disease. The father of the child, it is true, worked at the docks some two miles away, but he had to deal only with home as distinct from foreign shipping and he did not contract the disease until after all the other members of his household. The symptoms in the two cases were those of acute enteritis and certificates of death were given for zymotic enteritis and acute enteritis respectively.

The day after the wake on these two cases, the husband of the grandmother fell ill; but he was not removed to the hospital until fifteen days had elapsed and then he was supposed to be suffering from typhoid fever. In the meantime, on the 19th of August, sudden illness developed in an adjacent street, in a family, members of which had been present at the wake, this time a child of ten being taken ill. On the 21st acute pneumonia was diagnosed and the child died. A wake was also held on this case. In rapid succession four other members of this family fell ill and on the 25th a member of another family who also associated with the first, developed symptoms resembling typhus fever.

Only upon the 25th of August did the possibility of the disease being plague first occur to the resident staff of the Belvidere Infectious Hospital, to which many of these cases had been taken. On the microscopical examination of the fluid from a bubo in one of the cases the staff found what they considered to be the bacillus pestis, a conclusion which was eventually abundantly confirmed by Professor Muir of Glasgow University.

Immediately every effort was made to trace the cases to a common focus, the infected area was mapped out, in this area the ashpits were

emptied three times a week and washed weekly with a whitewash of chloride of lime; back courts in a dirty condition were hosed every night with a solution of chloride of lime (1-100); every house was inspected and there was complete medical inspection of the whole district. The occupants of the infected tenements and all who had come into contact with those showing the disease were asked to be inoculated with Yersin's serum or with Haffkine's prophylactic. Hand-bills were distributed offering the services of the medical staff at any time on application to the nearest police office. There was a thorough inspection of the Lascar and other crews of ships from infected countries. All patients were immediately removed to hospital, those coming in contact with them being taken to a reception house and kept there. The infected houses were fumigated, first with liquified sulphur dioxide and afterwards with formic aldehyde, their walls, ceiling, flooring, woodwork, etc., being also sprayed with a solution of formalin, 1 gallon to 50 gallons of water.

A pamphlet descriptive of the varieties of the plague was circulated among practitioners, hospital and dispensary attendants who were asked to make special note of any doubtful glandular affections. No attempt was made to hush up the fact that the plague had broken out and all the steps were taken deliberately and with thoroughness.

The result of these precautions, as again, we should add, of the relative insusceptibility of the Anglo-Saxon, was that after September 19th no further cases of plague were admitted to the hospital and that the total number of admissions of cases of definitely recognisable plague was restricted to 27, of whom only five died. Of these 27 cases eight only could be classed as severe, seven were of extreme mildness, so mild that save for their association with recognisable cases a suggestion of plague would scarcely have been raised, and 12 fell into a middle class.

These mild and atypical cases are those indeed in which the danger lies. It is to be noted from the above description that in the earliest cases what was noticed was the intestinal disturbance more than anything else. In those admitted to hospital some of the cases had a solitary bubo, others had a more generalised form of the disease in which several groups of glands were involved. In the mildest case pain in some group of the lymphatic glands rather than the actual bubo might alone be present. But, as pointed out by Drs. Brownlee and McClure, all the cases had certain groups of symptoms in common, notably the initial headache, the general malaise, nausea and vomiting followed by almost uniform complaints of pain in some one or other group of lymphatic glands, while in the milder cases, the patients have looked ill out of all proportion to the amount of fever present and the degree of enlargement of the lymphatic glands.

Nine of the cases were examined bacteriologically by Professor Muir and Dr. R. M. Buchannan, the affected glands being punctured and microscopical examination being made of the fluid obtained. By this method five patients were proved to have suffered from the plague and one post mortem, on another case, afforded enormous numbers of the plague bacilli. It should be noted, in explanation, that where the disease has lasted for some days, the bacilli are often no longer to be obtained from the lesions.

A few words may be said with regard to the precautions in the hospital. There the plague patients were isolated in a separate pavilion surrounded by a high wall ; all the discharges (fæces, urine, sputa, etc.), were placed in a 5 per cent. solution of carbolic acid while in the ward ; they were removed twice a day and boiled in a large autoclave before being passed into the drains ; all soiled linen was boiled for two hours before being removed from the plague enclosure, while the bulk of the patient's clothes were burned upon admission, the rest being disinfected by superheated steam. The nurses and those in attention upon the sick were inoculated with Yersin's serum and they had special overalls for use in the wards. No case of the disease occurred among these attendants.

Lastly a few words may be said with regard to rats. The part played by these animals in disseminating the disease has been of late greatly emphasized. It is interesting to note that in Glasgow not a single infected rat was discovered although they were killed in abundance ; no dead rats were found about the houses and the disease in this instance appears to have been conveyed pre-eminently by personal contact.

We note that an American health officer who visited Glasgow, considers that the medical inspection there was not as thorough as it might have been, and states that in America the precautions taken would have been yet more stringent. If this be the case the conclusion to be drawn is distinctly consoling ; the present wave of plague with our present preventive methods has little chance of gravely affecting Anglo-Saxon communities.

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The Morrice Pharmacological Laboratory, now in course of equipment in the new medical buildings of McGill University, has been placed under the charge of Dr. J. T. Halsey, a graduate of the College of Physicians and Surgeons, New York city. After spending some time as Interne at St. Lukes' Hospital in that city, Dr. Halsey determined to direct his energies towards research work in biological and pharmacological subjects. A year of careful work was spent in Professor Baumann's laboratory in Freiburg, and two years more with Profs. Fittig

and Hofmeister in Strasburg. The past two years have been spent in the laboratory of Prof. Hans Meyer in Marburg, where he held the appointment of assistant.

Before leaving Germany, Dr. Halsey selected the greater part of the apparatus necessary for the proper equipment of his laboratory. A portion of this has already arrived in the city and only awaits the completion of the laboratory building to be installed.

It is hoped that after the commencement of the New Year the laboratory will be so far in order as to permit of a series of demonstrations in physiological pharmacology to the more advanced students. Dr. Halsey also hopes to be able to undertake some original research work and will be glad to welcome in the laboratory any qualified persons desirous of pursuing work of this character.

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The position of Assistant Gynæcologist to the Royal Victoria Hospital was filled some time ago by the appointment of Walter W. Chipman, B.A., M.D., F.R.C.S.Ed., and in May he assumed the duties of his post.

Dr. Chipman is a Canadian, being the eldest son of William A. Chipman, Esq., of Bridgetown, Nova Scotia. He received his early education at the Bridgetown High School, Horton Academy, and Acadia University, Wolfville, where he took the degree of B.A. with honours, in June, 1890. His medical studies were pursued in Edinburgh, where in 1895 he graduated M.B., C.M., Buchanan Scholar of his year. This scholarship carried with it the position of Resident Surgeon to the University Gynæcological Wards of the Royal Infirmary for one year, under Prof. Simpson and Dr. Berry Hart. He was then appointed Resident Physician to the Royal Maternity Hospital, Edinburgh, where he served under Simpson, Croom, Berry Hart and Freeland Barbour. At this time he was elected a Fellow of the Edinburgh Obstetrical Society.

In the spring of 1897, Dr. Chipman secured the position of House Surgeon to the Bolton Infirmary, Lancashire. A year later he returned to Edinburgh to become the Assistant to Dr. Freeland Barbour, and took the degree of F.R.C.S.Ed., in 1898. In the same year he began work in the laboratory of the Royal College of Physicians under Noël Paton, selecting as the subject for investigation the rabbit's placenta. As a result of this work he was awarded the Freeland Barbour Fellowship of £100, and at the end of his second year's investigations presented a thesis for the degree of M.D. to the University of Edinburgh. This thesis was accepted, and in July of the present year the M.D. degree was conferred *in absentia* and with it a gold medal. In the intervals of his five year's post-graduate work, Dr. Chipman has also been able to make himself familiar with the gynæcology of London and of Paris.

## MEDICAL LIBRARY, McGILL UNIVERSITY.

### FOR THE QUARTER ENDING SEPTEMBER 29, 1900.

The following authors have presented copies of their works to the library :—

Hillier, A., M.D.—Tuberculosis, 1900.

Mortimer, M.D.—Home Nursing of Sick Children, 1899.

Robinson, T., M.D.—Diagnosis and Treatment of Eczema, 1899.

Smith, E. N., M.D.—Paralytic Deformities of the Lower Extremities. The Principles of Surgical Treatment, 1900.

Smith, H., M.D.—Practical Gynæcology, 1900.

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Materia Medica, Pharmacology, and Therapeutics. By C. D. F. Phillips, 1894.

Practice of Medicine. By W. Osler, M.D., 1895.

Photographic Illustrations of Skin Diseases. By G. H. Fox, M.D., 1889.

Transactions of the American Pediatric Society, vol. V., 1893.

Structure of the Central Nervous System. By L. Edinger, M.D., 1891.

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Boston City Hospital Medical and Surgical Reports, 1899.

British Orthopædic Society, 3 vols., 1896-99.

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Cincinnati—Report on the Purification of the Ohio River Water for the City, 1899.

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Glasgow Board of Health—Evolution of the Function of Public Health Administrator, as illustrated by the Sanitary History of Glasgow in the Nineteenth Century. By J. B. Russell, M.D.

On the Prevention of Tuberculosis. By J. B. Russel, M.D.

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Report of the Sanitary Administration of Burmah, Punjab, 1900.

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Iowa Agricultural College, 31 vols.

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Liverpool School of Tropical Medicine :—Instructions for the Prevention of Malarial Fever, 1900.

Report of the Malaria Expedition, 1900.

Liverpool Health Reports, 1900.

McGill University Graduates' Society:—Cancer of the Uterus. By S. S. Cullen, M.D., 1900.

Contributions to the Science of Medicine by the Pupils of W. H. Welch, M.D., 1900.

Manchester—Greater—Health Reports, 5 vols., 1891-98.

Medical Librarians' Associations :—Berliner Klinischer Wochenschrift, 1869.

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Dr. Jullien (presented by Dr. Shepherd)—La Goutte Militaire, by Dr. Jullien, 1899. Le Vere Bleu en Syphilographic. Toxic Products of the Bacillus of Hay Cholera, by J. McClintock, 1892. On the Action of Some Inorganic Cyanides upon Chlorocaffeine; by M. Gombuy, 1894.

Dr. Vandes Veer.—Some Unusual Cases of Appendicitis with Complications, 1899. Foreign Bodies in the Œsophagus, with Report of Cases, 1899.

Dr. McEachran.—Report on a Visit to Great Britain and the Continent of Europe in the Winter of 1897-98, 1898.

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Saunders' Medical Hand-Atlases—Diseases caused by Accidents. By Dr. Ed. Golebiewski. Translated by Pierce Bailey, M.D. 1900.

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*H. K. Lewis, London.*

Diseases of the Eye and their Treatment. By Henry R. Swansey, A.M., M.B. 1900.

*D. Appleton & Co., New York.*

A Treatise on Diseases of the Nose and Throat. By Ernest L. Shurley, M.D. 1900.

A Treatise on Mental Diseases. By Henry J. Berkley, M.D. 1900.

*P. Blakiston, Son & Co., Philadelphia.*

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Intestinal Indigestion. By Thomas Hunt Stucky, M.D., Ph.D. Medical Mirror.

The Diseases of the Blood in their Relation to Surgery and their Treatment. By George V. Van Schaick, M.D. New York Medical Journal, June 2, 1900.

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Aortic Regurgitation with Remarks upon Flint's Murmur and Paroxysmal Sweating. By Alfred Stengel, M.D. Pennsylvania Med. Journ., Nov., 1899.

Some Points in the Management of Obstetric Cases in Private Practice. By Joseph Brown Cook, M.D. Medical News, June 23, 1900.

Educational and Legislative Control of Tuberculosis. Chas. Denison, A.M., M.D.

The Diagnosis of Chlorosis and Chloro-Anæmia. Alfred Stengel, M.D. University Medical Magazine, April, 1900.

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Two Cases of General Anæsthesia. Charles W. Burr, M.D. Univ. Med. Magazine, June, 1900.

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Zur Statistik und Technik der Bottini'schen Operation bei Prostata Hypertrophie. Dr. Albert Freundenberg. Archiv f. klin. Chirur, 61 Bd. Heft 4.

Total Excision of the Scapula Alone, and with the Arm (Interscapulo-Thoracic Amputation); Partial Excision of the Scapula for Tumour. J. J. Buchanan, M.D. Phil. Med. Jour., 1900.