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THE SECTION OF MEDICINE.

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On the Influences that have Determined the Progress of Medicine during the Preceding Two and a Half Centuries.—On this very interesting, and indeed, unique occasion, when the British Medical Association meets for the first time on Canadian soil, the mind is irresistibly led to compare the condition of medicine at the present day with that which existed when Europeans first settled in Canada, and to trace the paths by which progress has been made. When Maisonneuve and his companions landed in what is now the Custom House Square in Montreal in 1642, and when shortly after, the first hospital was established by the missionary priests, medicine was in a rudimentary stage. Though anatomy had been prosecuted for some centuries, chiefly on the European continent, it formed no part of ordinary medical education; physiology in the scientific sense was unborn, and organic chemistry not yet created. The medical teaching of that day consisted mainly of the ancient doctrine of the four elements and their corresponding temperaments; of the separate functions of the vegetative, sentient and rational souls; of the agency of the natural, vital and animal spirits, that had continued to be taught with very litle variation from the time of Galen. It was an age of Aphorisms, Definitions, Systems and Nosologies. Medical opinions were so dominated by theories and burdened by the weight of authority, that the phenomena of disease for the most part passed unnoticed, and its teachings neglected. Such knowledge of medicine as the enterprising members of the medical profession who accompanied the early expedition to Canada possessed, must have been of the most elementary character, gained by apprenticeship under teachers whose

knowledge consisted in the doctrines of Hippocrates and Galen, and such crude experience as they themselves had obtained. Without doubt they were as zealous and earnest in their professional duties as we as a profession are to-day, and their treatment was as certainly unfettered and unrestrained by any scepticism as to the theories they had been taught, or doubts as to the efficiency of their remedies for disease. But this period was the dawn of a new era in science and medicine. Harvey's great work "On the movements of the heart and blood" and Bacon's "Novum Organon" had recently been given to the world, and the seventeenth century was a time of the greatest activity and discovery in geography and in science.

What a gulf separates that medicine of 250 years ago from that of to-day! In tracing how it has been bridged, it is right that we should justly apportion the influence that various spheres of activity have exercised in reaching our present position.

The Study of Anatomy—We must in the first place ascribe the greatest importance to the study of anatomy. Vesalius and Sylvius, Fallopius and Fabricius had already advanced it to a very high point, but the study had been confined to the leisured few. Gradually our knowledge of every detail of naked eye anatomy has been gained, and at the present time every one practising medicine must have a competent knowledge on the subject gained by dissection. The same systematic study has extended to Comparative Anatomy, and great, for its time, as was the knowledge of Aristotle it has undergone an entire revolution by the application of scientific methods to increased data of information by such workers as Cuvier, Darwin and Owen, It is now taught as a branch of medical education. Physiology could have no scientific basis until anatomy was fairly advanced. The facts on which it was at first based were founded on medical observations, but in the seventeenth century direct observations and investigations were commenced by Haller, Hunter, Spallanzani and Hewson. It has since been prosecuted with the greatest energy and success, and the position of physiology at the present time is that of a science, explaining the action and interaction of the organs and tissues, and the forces of the body which are the true foundation of scientific medical knowledge—the institutes of medicine. Morbid Anatomy could not exist until normal anatomy was fairly complete, but from that time, in the eighteenth century by the laborious researches of Morgagni and numerous other workers until now the broad facts of Morbid Anatomy have been accumulating until we have at the present day a fairly accurate knowledge of the principal pathological changes found in the body. The rise of physics and chemistry in the seventeenth

and eighteenth centuries contributed greatly to the progress of medicine, by increasing our powers of "searching out the secrets of nature" by methods and instruments of precision.

The Study of Histology—Of any one influence that has helped the advance of scientific study and the progress of medicine probably the increasing perfection of the microscope has been the greatest. With each new development of this instrument a greater range has been given to our researches, and, with the assistance of chemistry, it is continuing to reveal to us fresh facts that have created new branches of science. Starting from the observations of Bichat on the minute-anatomy of the tissues in 1801, the microscope has enabled us to understand the details of structure which were essential to complete anatomy. Until the microscope was capable of practical use the capillaries could not have been discovered by Malpighi, nor the composition of the blood understood; the mechanism of renal secretion could not be worked out until the minute structure of the kidney was known; the functions of glands, the process of digestion and secretion could not be understood until the histological details of the parts concerned were ascertained; the mechanism of light and hearing, of taste and smell, were not revealed until the ultimate details of the structures involved had been investigated; the marvellous complexity of the nervous system, whether in the delicate though comparatively coarse structure of the nerves, the higher intricacy of the spinal cord, and the marvellous details of the arrangement of ganglionic cells and communicating fibres of the cerebral tissue, which by improved methods of preparation and staining are being revealed to us at the present time, could not have been worked out without its aid. Just as anatomy had to reach a certain stage before physiology and morbid anatomy became possible, so normal histology had to advance before pathological histology could come into existence. And, as knowledge advances from the special to the general, special pathological histology had to reach to a very high point before we could reach that knowledge of general pathology on which our conceptions of the nature of disease are at present based.

What would Harvey have given to see the capillaries that completed the "circle" of the blood stream, or to have watched the process of inflammation in the exposed mesentery of the frog by the aid of the microscope—to see the contraction followed by dilatation of the blood vessels, the escape of blood corpuscles through the walls of the vessels? What a vastly different conception has the reader of Cohnheim's Lectures on General Pathology to that of the most advanced and profound investigator and physician of two and a half

centuries ago. The microscope again has introduced us to a new world, revealing minute organisms that play a great part in the plan of nature and which are largely concerned in the production of disease. It has led to a new department of science, bacteriology, which has taught us how bacteria enter the body, how they increase and multiply therein, and of the reaction of the tissue for self protection. Chemistry has shown how the poisons formed by such organisms act in the body and supplied us with means, as yet only in their infancy, for counteracting their effects, or guarding against their entrance by their exclusion and by protective inoculation. The microscope has further furnished us with evidence of parasitism, other than bacteria, in the blood, in the muscles, in the skin and hair, and on the mucous membranes. By its aid we are able to diagnose and watch the course of several primary diseases of the blood. It has enabled us to differentiate the various new growths that develop in our bodies. So much does the microscope constitute a necessary means of research that it would be impossible to conscientiously perform our daily medical duties without its aid.

Clinical Instruments of Precision—The thermometer again has been of invaluable aid in the study of disease, allowing of our measuring and recording the degree of fever, and of watching its progress with such a degree of accuracy as to furnish us with evidence of the greatest value in the diagnosis, prognosis and treatment of disease. Electricity, by the laborious and complete investigations of Dubois-Reymond, has revealed to us the mode of action of nerve and muscle that would have been impossible to obtain in any other way. Though the hopes at first entertained of its value in the treatment of diseases have not been altogether fulfilled, it is still of much service in this respect, and perhaps still more valuable as an aid in diagnosis.

The ophthalmoscope, introduced by Helmholtz, has enabled us to understand diseases of the interior of the eye, which without its assistance was impossible. It has admitted of the exact examination of refraction, and has revealed changes in the termination of the optic nerve, in the retina and choroid, not only valuable in themselves, but so important in the light they throw on pathological changes occurring in the nervous system, and in the body generally, that the use of this instrument has become a necessity of practical medicine.

The laryngoscope, perfected by Czermak, has given precision to the diagnosis and treatment of diseases of the throat not otherwise attainable, and which has important bearings on general medicine, by the recognition of paralysis of the muscles that move the vocal cords in aneurism and in disease of the central nervous system.

The sphygmograph, the cardiograph, the arteriometer, and, the latest invention of this class, the sphygmometer, by enabling us to ascertain the exact condition of the circulatory system are of the greatest service, not only in studying the problems of normal and abnormal physiology, but in the recognition of disease and its tendencies, and in the influence of remedies.

Auscultation.—Nothing from the time of Harvey gave such an impetus to the study of exact medicine as the introduction or discovery of auscultation by Lænnec in 1816; and, indeed, Harvey's great discovery had little practical application in clinical medicine until its introduction. Auenbrugger had introduced percussion in 1761. Lænnec had adopted it, and his discovery of auscultation with his zeal as a morbid anatomist, enabled him to work out most of the great problems of diseases of the thorax. The knowledge thus begun has, by the labours of many workers, increased in range and accuracy down to the present time, and the diagnosis of diseases of the chest has reached a degree of precision unequalled in any other department of practical medicine. We are now able not only to recognize disease of each of the valves of the heart, but to estimate its degree, and the influence of the lesion on the greater and lesser circulations and to trace the course and effects of emboli carried along the blood stream. Our knowledge of diseases of the lungs is nearly as complete as that of the circulatory system.

Vaccination—During the period that bridges the time from when Canada first became populated by Europeans to the present day probably no discovery has exercised a greater influence in medical science or conferred more lasting benefits on mankind than the introduction of vaccination by Jenner. It is not necessary in such a meeting to trace how Jenner was led to his discovery. Protective inoculation from smallpox by the introduction of the smallpox matter had long been known in the East, and had been introduced into England by Lady Mary Wortley Montagu, but Jenner's rare merit consisted in testing the statement made to him by Gloucestershire rustics, by scientific methods and experiments; and by waiting for years until the value of the protection the "variola vaccinia," introduced by inoculation into the human subject, had been tested by exposure to contagion from smallpox, and until time had elapsed to demonstrate that this protection was no ephemeral influence, but of more or less permanent duration as much as that of an attack of smallpox itself, "I never expected it would do more, and it will not, I believe, do less," are Jenner's words. It was not until many years after he had satisfied himself as to the protective influence of the vaccine virus that

Jenner in 1796 published his observations. It is needless to trace the effects this discovery has had in saving human lives, and in averting the disfigurements with which those who escaped death from the disease were almost invariably afflicted. It is probable that the full significance of his discovery was not revealed to Jenner himself, and on the other hand it is possible that he exercised self-restraint in not speculating as to the possible result that might accrue from his remarkable inquiries. Certain it is that the indirect results that have followed from Jenner's discovery that an attenuated virus was protective against contagion from the disease from which the virus was originally obtained have only recently been fully utilized. Probably several causes have been concerned in the want of continuity of progress in this direction, the most important of which has been the difficulty in isolating and handling the virus in many contagious diseases. The investigations into the full extent of the value of inoculation with attenuated virus and derivatives of bacteria have only been commenced in the last few decades, since bacteriology has been cultivated by Pasteur, Lister, Koch, Klein, Gaffkey, Martin, and others, and the whole subject with the aid of organic chemistry made a branch of exact science. Bacteria are now classified by their morphological qualities, by their reactions to staining reagents, by their modes of growth in various media, the temperature at which they grow and at which they are destroyed is determined, their need of oxygen ascertained, the parts of the body they make their habitat studied, the effects of their invasion in the tissues, and the protective powers of the organisms observed. The chemical products to which they give rise are isolated, their nature ascertained and their effects observed on the living body independently of that of the organisms by which they are formed. Finally the knowledge thus obtained is turned against the bacteria. The virus is attenuated by various methods, often by passing through the body of an animal immune to the disease, and its exact strength ascertained. It is then used for protective inoculations or for antidotal purposes in those already attacked by the disease from which the virus was originally obtained. Jenner's and the recent researches are equally scientific, observation, induction, experiment—but the differences in carrying out the inquiry on smallpox by Jenner and that of any specific disease due to an organized virus, at the present time, illustrate my theme of how the progress of medical science has been effected. Great as it has been and precise as a rule as are our methods of research, it is remarkable that up to the present time in two diseases in which protective and curative inoculations have been most conspicuously successful, namely,

smallpox in which we had, thanks to Jenner, the first vaccine, and in hydrophobia in which Pasteur succeeded in attenuating the virus and using it as antidote, we have not succeeded in finding the micro-organism that is the true virus, unless, indeed, Copeman Monkton has at length done so in the case of smallpox and vaccinia. As a matter of fact this organized virus has yet to be discovered in many of the most common specific communicable diseases, but the knowledge gained by the study of some members of this class in animals, and of some, *e.g.*, diphtheria in the human subject has afforded a basis of knowledge applicable to the whole group.

There is one other branch of medical science which has been incidentally alluded to in the previous remarks, but which requires fuller recognition in the survey of the influences that have governed our progress. I allude to Experimental Investigations in Animals. In the Seventeenth Century, in the hands of Harvey and others, but more especially in the Eighteenth by the labours of Hunter and others, and in the Nineteenth Century, this method of observation has been the basis of normal physiology, and later of abnormal physiology or pathology and therapeutics. These investigations enabled us to reach a degree of knowledge not obtainable in other ways, not only of value to man, but also to the lower creation.

Therapeutics.—Until the exact nature of disease is fully understood, a truly scientific treatment is manifestly impossible. I need not discuss how entirely in the past but also at the present day, our knowledge of treatment has been mainly empirical. It could not be otherwise. It is true that up to the present time scientific therapeutics only influence our treatment to a small extent. But, looking back, as we have been doing, to the course of progress in medicine, we have seen that it has throughout followed the line of patient and exact research. The action of drugs is now studied with the same care and precision that have been employed in physiology and pathology, and we are yearly adding to the stock of exact knowledge of the action of remedies. The scientific application of this knowledge will come with a more complete understanding of the cause of the disease, increased knowledge of pathology, and greater precision in diagnosis. But therapeutics is not coterminous with drug treatment. It includes all the circumstances of the management of the sick, the surroundings, the feeding and general care of the patient. In all of these respects enormous strides have been made, which greatly influence the chances of recovery of the patient of to-day. Moreover, therapeutics includes prophylaxis, the prevention of disease. It is in preventive medicine that the greatest triumphs of medicine have been and will continue to

be gained. The work of Jenner, Pasteur, Lister, Koch and other pioneers of preventive medicine, has saved more lives, probably, than remedial art can claim. Fresh fields of therapeutical triumphs are opening to us in the employment of antitoxin serums and extracts of animal secretions, so that if therapeutics has lagged behind other branches of medical science, it has been due to unavoidable causes, and we may look forward hopefully and confidently to its future.

The Growth of the University System.—We must not leave out of consideration in tracing the path of progress the remarkable development of the University system in all civilized countries, and the increased care and methods of medical teaching.

All the branches of scientific knowledge we have been considering, anatomy, and physiology, chemistry and physics, morbid anatomy and pathology, therapeutics, and preventive medicine have helped us to the knowledge we at present possess. But they have rendered a further aid to medicine than the mere knowledge they enabled us to acquire. Themselves scientific studies utilising methods and instruments of precision they have influenced our whole mode of thought and made us exact and precise in our observations and investigations of disease. We may paraphrase an expression of Burdon-Sanderson's "The history of modern medicine is largely the history of scientific method." So when we are taunted with the assertion that medicine is not a science, we can reply that medicine utilises the knowledge gained in every branch of science, and is scientific in its methods of research into the nature and treatment of disease. If its results are not so exact as in some other branches of knowledge it is not due to any want of scientific method and care in its investigations, but to the very complicated phenomena with which it has to deal, whilst the investigator has not the same unfettered freedom of dealing with his subject that the investigator into chemistry or physics has. By a continuance of the same methods and exact research we cannot for a moment doubt that the progress that has been so manifest in the past will be exceeded in the future.

Clinical Medicine.—If we turn now to Clinical Medicine we shall see what great strides in progress have been made. It is only possible to give a few illustrations in the time at my disposal.

Fevers.—One of the most important advances in clinical medicine has been the separation of enteric from typhus fever by the labours of Jenner, A. P. Stewart, Murchison, Liebermeister and in America by Stuart. Relapsing fever has in like manner been separated from the other fevers by Barker and Cheyne, by Graves and Stokes, whilst in 1873, Obermeier described the spirillum in the blood of this disease

at that time the only instance in which a specific organism in the blood was proved to be always present in fevers. Quite recently by the labours of Laveran and Marchiafava, Celli and Golgi, Councilman and Osler, after previous unsuccessful attempts by Salisbury and Balustra, Klebs and Tommasi-Crudeli, it has been conclusively proved that a microscopic parasite, the plasmodium malariae, is the actual cause of malarial diseases that are so common and destructive in some parts of this continent and in other parts of the world. All these gains to clinical medicine, so important in the recognition and treatment of disease have been due to increased precision in clinical observation and Morbid Anatomy, aided in a high degree by the use of the microscope.

Diseases of the kidneys.—It may be safely asserted that two and a half centuries ago nothing was known of diseases of the kidney except the facts of the very coarsest lesions, such as calculus and suppuration. Even these were very imperfectly connected with their clinical manifestations. The detection of albumin in the urine by Cotugne in 1770, followed by the observations of Wells and Blackall, but more especially the work of Richard Bright, who combined in a rare degree the powers of accurate clinical observation and diligent post mortem research, furnished a new vantage ground to the study of clinical medicine. The continued researches of many of the ablest physicians in all countries, who have availed themselves of each new discovery and perfection of instruments of exact investigation, have brought our knowledge to a very high degree of perfection on this subject. The recognition of the association of increased arterial tension with renal disease, and the far reaching effects of this in the production of cerebral hæmorrhage and other consequences, has been one of the triumphs of modern medicine.

Diseases of the nervous system.—The gradual unfolding of the closed book of the nervous system, by the successive gains in our knowledge of its anatomy and physiology, the invaluable work of Sir Charles Bell and Marshall Hall, the histological researches of Caskell, the clinical and pathological work of Charcot and Westphal, the experimental work of Fritz and Hitzig, of Ferrier, Bevor, Victor Horsley, and others has helped us to understand in a great measure the working of the nervous system and the effects of its lesions. But Clinical Medicine may justly claim to have had a large share in aiding us to reach our present knowledge of its workings and disease. The deductions of Hughlings-Jackson and Broadbent, and the recent valuable work by Starr, Edward Head and Thurston have greatly increased our knowledge of the physiology of the nervous system and aided us

in our means of diagnosis. Improved methods of surgical technique, especially the advent of antiseptic surgery by the genius of Lister have brought some of these into the region of curative treatment.

Addison's disease.—The discovery by Addison of the association of asthenia, gastric irritation and pigmentation of the skin with diseased changes in the suprarenal bodies will always remain a model of good scientific work, combining clinical and pathological observation. At the time when Addison recorded his observations no definite functions were ascribed to the adrenals, and he could do no more than draw attention to the association of the clinical and post mortem conditions. The full fruition of his discovery was to come later when it was established that the suprarenal bodies formed a secretion which supplied to the circulation, probably through the vasomotor centres, a stimulus or tonic necessary for the maintenance of health, and that the asthenia which is the cause of death in Addison's disease is due to the deprivation of this secretion by destruction of the adrenals.

Myxœdema.—In the developments of our knowledge of this condition we have one of the most completely worked out sections of medical knowledge, and the manner and modes in which our knowledge has been gained is most instructive. Starting from the recognition of endemic cretinism in regions in which goitre is prevalent, we next have the observations of sporadic cretinism in England by Curling, who noted that the thyroid gland was ill developed or absent in these cases. Then came the description by Gull of "a Cretinoid State supervening in Adult Life in Women." Later followed a communication by Ord, in which he pointed out that the changes in this disease were due to a mucin-yielding œdema, and who also noted the atrophy of the thyroid body, and discussed its relations to endemic and sporadic cretinism. He gave to the disease the name of myxœdema, which it has since been known by. Next the observations of Reverden and Kocher that a condition similar to myxœdema was apt to follow upon total extirpation of the thyroid gland for the cure of goitre. The latter called this condition "cachexia strumapriva." Semon pointed out the identity of myxœdema, cachexia strumapriva and cretinism, and that each was dependent on a loss of function of the thyroid body. Paul Bruns published a case in which the extirpation of the thyroid gland of a boy, aged ten, had been followed by the condition hitherto described in this country as sporadic cretinism. Then Victor Horsley by experimental research on animals succeeded in demonstrating that loss of function of the thyroid gland produced all the symptoms known as myxœdema and strumapriva, and varying the mode of experimentation obtained strong evidence that cretinism

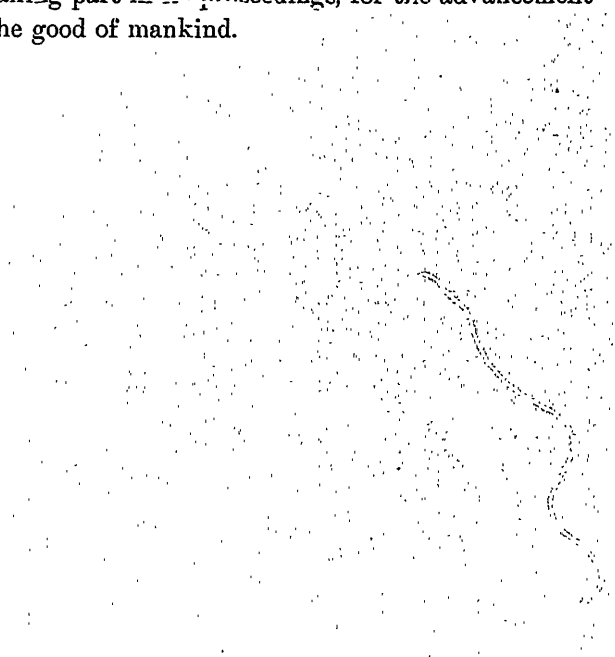
was a more chronic form of the condition. Finally came the crowning of the edifice by Horsley proving that transplantation of the thyroid gland arrested the changes, by the same results being obtained by Murray by subcutaneous injections, by Hector Mackenzie, by feeding with the glands, and lastly by other observers by the internal administration of an extract of the thyroid body. By these means we have learnt that myxœdema and sporadic cretinism can not only be kept at bay but that in the latter class of cases a remarkable growth and development can be brought about. Thus it has been shown that the thyroid gland, and probably every other ductless gland removes or forms certain products in the body and that the integrity of those glands is essential to the well-being of the individual. This knowledge is being turned to account in the treatment of quite a number of conditions. It is interesting to observe how these results have been acquired by the steady progress of scientific methods of observation and research, and to my mind the Report of the Myxœdema Committee of the Clinical Society of London, which embraces most of the above facts, is one of the most instructive contributions to medicine, by showing how each of the great branches of medical science has contributed to the result.

Conclusion.—The question may be asked, have the great and undoubted advances in Medicine been attended with any benefit to mankind. To this question no uncertain answer will be given. Human life has been prolonged, and not only is this so, but as brought out very clearly by Dr. James Pollock, from the figures of Mr. Noel Humphreys, several years have been added to the most useful and valuable period of life. There has been a manifest decrease of mortality from smallpox, scarlet fever, diarrhœa, typhus, enteric fever, phthisis, convulsions, croup, diseases of the digestive system, and puerperal diseases, etc. On the other hand there has been an increase of mortality from cancer and some other diseases. The gains have been greater than the losses, and this is not the occasion to discuss why we have failed in this direction.

But whilst the review we have taken of the progress of the science and art of medicine is encouraging, we must remember there will always be a limit to our powers of curing disease. When any part of the higher tissues is destroyed it can never be replaced by the recuperative powers of nature or improvements in medical science Sclerosis and destruction of the nervous elements means that they are almost irremediably lost. If the lung is destroyed by tubercle or other disease it can never be replaced. Nothing can make good disintegration of the kidney or liver. Nor shall we be ever able to retard the

effects of time. "To die is as natural as to be born" it has been truly said, and the silver cord that chains us to this world must sooner or later give way. Great as have been the improvements in the treatment of disease, our greatest triumphs, in the future as in the past, will continue in the prevention of disease.

One of the most important features in modern medicine has been the remarkable development of Medical Societies and Associations, and the fact that they are yearly increasing is strong evidence that the profession finds them useful in its work. They enable us to submit our observations and inquiries, our theories and our practice, to the criticism of those most competent to discuss them and thus to separate the wheat from the chaff. The meetings of the British Medical Association amongst others have been most useful in this respect. Let me conclude by expressing a hope that the work done at this Meeting at Montreal, and especially this Section of Medicine, will aid in the search after truth, will stimulate and ennoble the aims and energies of those taking part in its proceedings, for the advancement of knowledge and the good of mankind.



THE SECTION OF SURGERY.

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On the Teaching of Surgery—In taking the chair at this, the opening meeting of the Section of Surgery, allow me to express my sense of the high honour I enjoy in presiding here to-day. It is no small matter for an English surgeon to be called upon to preside over colleagues of such eminence as are represented by the Vice-Presidents of the Surgical Section, and I beg leave to tender to them, and to the eminent surgeon who is President of the Association, my thanks for having selected me for so distinguished a position. As an English surgeon it gives me the greatest pleasure to meet the members of the profession in the Canadian portion of Greater Britain, and also those medical brethren from the United States who have been good enough to attend this meeting. I trust our deliberations will not merely advance the science of surgery, but will cement those bonds of fellowship between the members of a united profession, which our common Anglo-Saxon origin should foster and maintain.

In addition to the various papers which will be read in the Surgical Section, it has been thought desirable that there shall be held two discussions on questions of surgical interest; and after considerable deliberation it has been decided that these shall be: (1) Appendicitis and its Surgical Treatment; and (2) the Treatment of Cancer of the Rectum with special reference to High Operation. The Honorary Secretaries have arranged with certain eminent surgeons to introduce these subjects, one this morning and the other to-morrow, and I trust that the discussions will be well supported.

Nothing, I venture to think, is more remarkable than the recent progress of abdominal surgery. Twelve years ago I was engaged in editing a *Dictionary of Practical Surgery*, and neither appendicitis nor the operation for the removal of the rectum, with which Kraske's name is connected, was mentioned in it, although I had the assistance of the leading London hospital surgeons. Kraske's original paper, I may mention, was published in 1885, and is referred to in Ball's work on the rectum, published in 1887, and in most surgical works since that date. The subject of appendicitis, so far as British surgery goes, dates from a paper read before the Royal Medical and Chirurgical Society in February, 1888, by Mr. Frederick Treves, though the title

of it was *Relapsing Typhilitis Treated by Operation.* In August of the same year Mr. Treves opened a discussion on the Surgical Treatment of Typhilitis, at the meeting of the British Medical Association at Leeds, and subsequently published his address with additions and alterations, in the form of a monograph, entitled *The Surgical Treatment of Perityphilitis.* I do not know to whom we are indebted for the hybrid term "appendicitis," but it did not appear in the index to the *British Medical Journal* before 1891.

But it is not merely in these two departments that progress has been made. The surgery of the kidney and of the liver has advanced *pari passu* with that of the hollow viscera, and the labours of Morris and Robson in England, and of Keen and others on this side of the Atlantic, have done much for the relief of suffering and the prolongation of life.

Looking back over forty years of professional life, nothing surprises me more than the change which has come over the treatment of calculus. In my student days, to see Ferguson cut for stone by the lateral method was to witness an operation as near perfection as was conceivable, and the dexterity and rapidity with which the calculus was extracted were only marred by the frequency with which death from septic causes spoiled the skill of the surgeon. To have one's first lithotomy was an event in the life of the young surgeon, and every now and then a reputation was spoiled by some *contretemps* in the public performance of the operation. Later, I was the frequent witness of my colleague Henry Thompson's skill in using the lithotrite to break up the calculus in a series of "sittings." Then came in "litholapaxy," or rapid lithotrity, which we owe to Bigelow, the great American surgeon; and, lastly, that recurrence to the old high or suprapubic operation which was due to the Scandinavian surgeon Petersen. Hence the student of to-day rarely, if ever, sees a perineal lithotomy, and as a consequence his interest in the anatomy of the parts concerned in the operation has greatly diminished. Possibly the surgeons of the last generation laid too much stress upon anatomical details, but it is somewhat remarkable to find how little anatomy seems to serve for practice in the present day.

I am told by those who are teaching anatomy now that it is difficult to get the student to take the trouble to make a neat dissection, because he can find in the various museums, and notably at the College of Surgeons of England, such beautiful preparations in spirits that he prefers to study from them, or from pictures rather than labour to get out the details for himself. If this is so I can only

regret that the present race of students is so short-sighted, for without a working knowledge of human anatomy I can conceive of no progress in surgery.

But I regret to find that, in Great Britain at least, the teaching of anatomy is gradually getting more and more into the hands of professors who are anatomists but not surgeons, and that their tendency is to lay stress upon transcendental details rather than surgical relations. When these gentlemen happen to become examiners, this tendency to specialise become very marked, and as this applies equally to the teachers of physiology and chemistry, the unfortunate medical student becomes the victim of science (falsely so-called) and sometimes develops into that marvellous being a London B.Sc.

But seriously, are we not overlooking the scientific teaching of the man who has after all to get his living as a practitioner of medicine, surgery and midwifery? When the medical curriculum was lengthened by a year it was hoped that the additional time would be devoted to clinical work, but I fear that this is by no means always the case, for it is not uncommon for the student to take three years in passing his primary examinations, with the result that but two remain for the study of medicine and surgery. When I became a student of medicine I took to heart the advice of my teacher of physiology, William Bowman, and never allowed a day to pass without visiting the hospital; and though as a lad of 16 I failed of course to appreciate the importance of all that I saw, yet I saw it, and I can carry my mind back now to cases seen and lessons learned in the early fifties which are of service to me at the present time. But the student is practically forbidden to enter the wards now until he has satisfied the examiners in anatomy and physiology, which he may or may not do in two years, and then there are but three years left for him to study *totam rem medicam*.

Far be it from me to decry the modern methods of teaching medicine in the wards of our hospitals. I believe that the care taken to induct every student into the mysteries of auscultation and percussion is beyond praise; and if with some teachers treatment is regarded as of secondary importance, at least the student has the opportunity of studying *vis medicatrix naturæ* untrammelled under one teacher, and of watching the effects of every new drug upon the human system under another. But all this takes time, and so also the elaborate manipulations of the gynæcological department, the researches of the pathological professor, and all the other teachings of the third and fourth years. And where, then, does surgery come in? Why, I consider myself fortunate if I can secure the regular

attendance of candidates for a surgical diploma for the last three months, when their names are put on my list, and I subject them to rigid surgical cross-examination. But if I venture to refer to an illustrative case of last year, I find that no one present saw it or even heard of it, though at the time the whole surgical staff may have been in consultation upon it. How, I ask, is it possible for the student to see the serious surgical ailments which are not very common, such as aneurysm, tumours of bone, tetanus, etc., if his attendance in the surgical wards is limited to a few months ?

And yet there has never been a time of greater activity in operative surgery, not only among hospital surgeons, but among general practitioners, who, thanks to anæsthetics and antiseptics, undertake operations of a magnitude which the hospital surgeon of the last generation would have hardly attempted. How are we to explain the apparent contradiction ? In the first place, I am afraid we must allow that a great many mistakes in diagnosis are made, or rather, that too often no attempt at diagnosis is made, but that an operation is undertaken to "clear up the case." That it generally does no doubt, but not always to the benefit of the patient. Then we must allow that with unlimited time for the anæsthetic, the least skilful surgeon may hope to bring an operation to a conclusion more or less satisfactory to himself, and, if he operates under fairly favourable circumstanees, for his patient also. Lastly comes the enormously increased opportunity for the publication of a success at one of the numerous mutual admiration societies and in one of the medical journals of the day. Can we wonder, then, that young surgeons whose stock-in-trade of professional knowledge is of the smallest, blossom rapidly into operating surgeons in some special department, and try not unsuccessfully to prove that all is fish which comes to their net ?

Still, gentlemen, the great foundations of the art and science of surgery remain undisturbed. Without a knowledge of anatomy, of pathology, and histology, progress in surgery is impossible, and it is for those who hold the important positions of teachers in our great medical schools to insist upon a foundation of scientific and practical training being given to our students if they are to become the successful practitioners of the future. The growing tendency of the non-medical teachers of collateral science to regard their particular subject as the most essential for the medical student must be restrained, and the preliminary period of medical study must be cleared of many obstructions if the student is to have the necessary time to devote to the thorough study of those strictly medical subjects which will fit him to be a sound practical, and at the same time scientific, physician and surgeon.

THE SECTION OF PUBLIC OR STATE MEDICINE.

E. P. LACHAPELLE, M.D.,
President of the Board of Health of the Province of Quebec.

The Progress of sanitation in Canada.—It is with the utmost pleasure that I offer you a warm greeting to Montreal, the metropolis of Canada, and the seat of the Board of Health of the Province of Quebec. By accepting the general invitation tendered you by the Montreal Branch of your Association, you have, in this year 1897, that stands out in golden figures in the annals of the reign of Queen Victoria, wished to judge *de visu* of the progress made in sanitary matters by the foremost of England's colonies. The hearty readiness and cordial grace with which you have responded to our call, honours us most highly and receives our sincere gratitude. Be assured that the presence among us of such learned and distinguished men as those we see assembled here, in this hall, this morning, fills us with legitimate pride, and will be a powerful motive of encouragement to us in the pursuance of our labours in the cause of humanity. Here, you must be at home; and it is with enthusiam that, in the name of the Sanitary Authorities of our Country, I wish you heartfelt welcome.

I shall not detain you long, and so, not protract the eagerness you feel to broach the subjects on to-day's programme. I shall, therefore, in the few minutes allowed me by the rules of the Association, briefly and rapidly expose to you the progress of Sanitation in Canada, presuming that on your arrival here, it would be interesting to you to be made familiar with the sanitary organization of this country. The present sketch is but a concise synopsis of a work which the patient and fertile investigations of Dr. E. Pelletier, the Secretary of the Board of Health of this Province, have permitted me to undertake, and which will shortly appear in a cyclopedia to be published in Toronto. I, therefore, beg you to grant me the first moments of this meeting during which I will rapidly analyse, trying to be clear and precise, all the sanitary legislating done in Canada, from Louis XIV, of glorious memory, up to the sixtieth year of the reign of our illustrious and most Gracious Majesty, Queen Victoria.

Hygienic measures under the French regime, 1603-1763.—One can hardly expect, at such a remote period and in a new country, to see hygienic measures occupy an important place in public administration. In its early days, Canada was, we may say, under the control of the "Peltry Trade," or the fur companies, who leased the country

from the King of France, as one would now rent a hunting ground, and who had, naturally enough, but one thought—that of deriving from the fur trade with the Indians the most advantageous results.

Nevertheless it is surprising to see with what precision and practical good sense certain sanitary questions were looked upon and dealt with during the reign of Louis XIV. Thus, in 1667, we find that the King of France, in one of those ordinances that were for so long the Civil Code of Canada, establishes for the Civil State a system of registration which is still in force in the Province of Quebec. It is the clergy who keep the registers of baptisms, marriages and burials, and they furnish the civil authorities with a copy of such. The King's ordinance reads: "There shall be kept in each parish two registers in which to inscribe the baptisms, marriages and burials; one shall remain in the hands of the parish priest, and be considered as the original; the other shall be turned over to the judge royal and recognised as the copy." This was taking, in the early days, an efficient means of following up the development of the Colony, and of realising its firm civil standing. As stated before, even to-day, in this Province, the same simple system is thought still sufficient.

A few years later on, the Superior Council of Quebec busies itself in a very enlightened manner with the question of foods. Thus, in 1677, it convenes a general meeting of the inhabitants to decide upon the inspection and price of bread. Again, in 1707, desiring to provide the inhabitants with meat of good quality, it passed inspection regulations equivalent to our modern stamping. No butcher could, under penalty of confiscation and fine, slaughter an animal without previously notifying the procureur of the King, or his representative, so that the latter might ascertain whether the animals were or were not in a fit condition to be distributed to the public. No farmer could bring into, or sell in, the city without first presenting to the procureur of the King, or his representative, a certificate from a judge, if there was one in the place he inhabited, or from the seigneur (or lord of the manor), the parish priest, or the officer of the militia, said certificate to testify that the animals brought in were not diseased before they were slaughtered and that they had not died of any such accidents as drowning or poisoning. It would be hard to do better, even now-a-days.

All the other regulations sanctioned at this period relate exclusively to the cleanliness of the streets and dwellings; some ordinances, however, revert to public morality. The King takes charge of foundlings, and allows nurses 45 livres for the first three months of nursing for each child, and 10 livres a month thenceforth, till the child has

attained the age of 18 months. The children are then bound over to honest citizens and countrymen, till they are 18 or 20 years old. (1748).

Sanitation under the British Rule.—Before the Confederation, 1763-1867.—Under the English domination, hygiene falls into oblivion for several years. After the cession of Canada to England, the greater part of the Canadian nobility returned to Europe; on the other hand, the British element increased and acquired more authority, thus forcibly causing for some time pronounced social perturbation. Next came the epoch of martial agitation, and the war with the United States, which engrossed public attention almost entirely.

The first preventive sanitary measures that spring forth are those necessitated by a new threatening danger—typhus fever. The typhus fever epidemic of 1795, in Ireland, demanded the urgent protection of the colony; so, vessels coming from infected ports were obliged to submit to an inspection, and if found necessary were quarantined. The captain was bound to hide nothing from the inspector, under penalty of losing his head, and suspected vessels were liable to be fired upon. However vigorous those measures may in appearance seem, they had the great fault, as to organization, of being but temporary, incessant renewal being thus required.

From 1815 to 1821 the Government appoints medical vaccinators, grants prizes for a memoir on the advantageousness of vaccination, and encourages the practice as much as it can; but without, however, rendering it compulsory.

Again in 1832, a new stimulus in favour of hygienic measures is generated by the appearance of cholera in the country; a delegation is sent to New York in order to examine the measures there employed; health boards are formed; a quarantine station is organized at Grosse Isle, the declaration of the disease is required, &c. Unluckily all this valuable organization ceases with the disappearance of the epidemic. In 1849, a second incursion of the disease does not seem to have made the legislation any the wiser, or to have induced more permanent organizations. But, withal, the law passed in that year is a statutory law, very precise, meeting the needs of the public in case of epidemics, and destined to remain in force; this law, in 1885, during the epidemic of variola, in this Province, was appealed to with the most desirable results. Nevertheless, all organizations established by this law of 1849, must, in accordance with this same law, vanish with the cessation of the epidemic.

We must recognize, then, that nothing stable, no permanent organization had been established under the British Domination, up to the Confederation.

Since the Confederation, 1867-1897.—With the advent of Confederation, we enter a period of positive systematization. The British North America Act defines the respective rights and powers of the Federal Government, as well as those of the Provincial Governments, and those bodies are not slow in adopting all measures to insure public safety. We will now review in a detailed abstract, the laws successively enacted at Ottawa and in the different provinces, in order that you may conceive their sphere of action and the extent of their effectiveness.

I. Federal Sanitation.—All matters relating to foreign countries and to commerce are of federal jurisdiction, and, accordingly, sanitary laws were passed at Ottawa in reference to immigration and quarantine, the prevention of contagious diseases in animals, the suppression of food adulteration and the compilation of statistics. Aside from the decennial census, however, this latter work is left almost exclusively to the initiative of the provincial authorities, who may be called upon to furnish Ottawa with a copy of their collations.

Ere the first year of the Confederation (1868) the Federal Government enacted an "Immigration Act" destined to be completed later on (1871) by the Quarantine Act, and rendered most effective by the laws of 1893. Actually, our ports are protected by eight well organized quarantine stations: Grosse Isle (Quebec); Halifax (Nova Scotia); St. John (New Brunswick); Sydney (Cape Breton); Hawkesbury Nova Scotia); Chatham (New Brunswick); Charlottetown (Prince Edward Island); and William Head (British Columbia).

The staffs of these stations see to the inspection and disinfection of vessels, to the vaccination of passengers, to the detention in quarantine, when required, &c. The frontier custom officers, especially those along the United States border-line, are, when necessary, required to act as quarantine officers.

With regard to contagious diseases in animals, the Federal statute (1884-1896) provides for the quarantining of exported animals, and for the repression of epidemics among animals. In no way, however, does it consider the transmissibility of disease from beast to man.

The "Adulteration Act" appoints food analysts to whom any person may submit samples; it also has some provisions respecting milk supplies and other foods (1884-1889).

Any trader offering for sale food that is adulterated or otherwise unfit for consumption, is liable to be prosecuted, according to the law.

To sum up, if we except the quarantine organization which is under Ottawa's exclusive control, it is easy to see that on other questions (vital statistics, contagious diseases in animals, food adulteration)

the provinces have a concomitant jurisdiction which may, as a legal constitutional right, be looked upon as somewhat doubtful, but which as a fact, they do exercise, thus completing federal legislation by provincial statutes.

II. Provincial Sanitation.—Moreover, the sanitary organization of Canada could not be at all complete, without the intervention of the provincial authorities; because Ottawa can act only on questions of commercial interest, or in order to protect the country from outside dangers. The prophylactic treatment of local contagious ailments, the sanitation of public and industrial establishments, of dwelling-houses and of schools, the routine food inspection; in a word, every means that refer to the preservation and protection of private and public health, and we may add, the compilation of vital statistics, must necessarily be based on the interference and activity of the provincial authorities, who, in their turn, must acquire the co-operation of the municipal boards.

In most of the provinces of the Dominion of Canada the local legislature has, by a statutory law, delegated its powers to a Provincial Board, charged with enforcing sanitary measures, and in whom, consequently, lies the authority. At the same time, the municipal authority, perserving their own independence, may make municipal regulations, and in most cases need the provincial interference only in a measure requisite to insure the exercise of their powers to the desired extent.

The law, however, varies on this matter in different provinces, as we shall see in a few moments, when speaking of Quebec and Ontario. It is to be noticed, also, that the Lieutenant-Governor-in-council, both in the Province of New Brunswick and in that of Nova Scotia, possesses a joint action with the Provincial Board, and he may also in certain cases (Nova Scotia) veto any measures taken by the municipalities. Certain Provinces, such as Manitoba and British Columbia, possess special organizations. Finally, the Northwest Territories and Prince Edward Island have no provincial boards of health, although there exist sanitary laws investing extended powers in the Lieutenant-Governor-in-council and in the municipal authorities.

Ontario and Quebec are, perhaps, the best managed Provinces; in any case, they are the ones in which the organization is the oldest. We will examine them conjointly.

The Provincial Board of Ontario was founded in 1882, that of Quebec in 1886. It is those two boards that have enabled public hygiene to make the greatest progress in Canada.

In Ontario compulsory vaccination of all children over four months

of age has been provided for by the statute, and school teachers may require a certificate of vaccination from intended pupils. The Provincial Government has the entire control of vital statistics (1896), the compiling being done directly by the secretary-treasurer of each municipality. Finally, the Food Act, very explicit in regard to cities, renders more definite the Federal laws on food adulterations and specifies their bearing.

In the Province of Quebec vaccination is obligatory by statute in four cities, but any other municipality may render it compulsory. The keeping of the registers of the civil state is still, as in the days of Louis XIV, confided to the care of the clergy of whatsoever denomination, and it is from those gentlemen that, each month, the Provincial Board of Health receives the certificates establishing the causes of death and those reporting the marriages and births. From these reports the Board compiles its statistics. Regarding the adulteration of foods, the Provincial Board has power to make regulations to supplement, in a certain measure, the Federal laws. In relation to the prevention of contagious diseases, hygiene in factories, sanitation in general, and the suppression of nuisances, the Quebec Provincial Board has issued permanent and very precise regulations, and has formulated in them a standard of effectiveness that must be attained by the municipal boards. Apart from these permanent regulations it has besides the eventual powers of making special regulations during the prevalence of epidemics. It can, moreover, compel the local municipal boards to enforce the powers with which the Municipal Code invests them concerning sanitary matters. Although the Provincial Board centralizes all the sanitary authority in the Province of Quebec, it does not restrain to its regulations municipalities which desire to improve on them. In both Ontario and Quebec the Provincial Boards may exercise the powers conferred upon the local boards, if such local Boards neglect or refuse to perform their duties.

In Ontario the interpretation and the enforcing of the Factory Act is left entirely to the inspectors.

In Quebec the Provincial Board expounds the law in lucid details ; not only does it specify the hygienic measures to be obtained, but it clearly explains how they should be put into practice ; consequently, all that is left for the local sanitary authorities to do is to perform them as directed by the Provincial Board.

The approval of plans of aqueducts and drainage devolves on the Provincial Board in the Provinces of Quebec and Ontario. In Quebec the law regulates the disposal of the dead, and enacts that the sites of cemeteries shall be chosen by the Provincial Board.

To keep within the time limit I must necessarily be brief in speaking of the other provinces.

New Brunswick (1887) and Nova Scotia (1893) possesses somewhat identical organizations ; thus, the Lieut.-Governor-in-council having the right to legislate on sanitary matters. The municipal boards in both these provinces enjoy similar powers ; only, in Nova Scotia the Lieut.-Governor can put his veto. The sanitary laws of New Brunswick (1887-88-89) very much resembled those of the Province of Quebec, as they confer on the Provincial Board the power to make regulations respecting the prevention of the contagion, the inspection of food and of insalubrious industries, drainage and the repression of nuisances. The Registration Law (1887) provides for the publication of vital statistics. In Nova Scotia the authority of the Provincial Board with regard to contagious disease is simply advisory ; it may, however, during an epidemic, substitute itself to inefficient municipal boards.

Manitoba (1893) admits of a special organization which seems to suit the needs of a country whose population is disseminated over a vast extent of territory. Its Provincial Board is composed of five members—a veterinary surgeon and four physicians. For the needs of local administration the four physicians are titled inspectors, and the Province is divided into four districts. In each of those districts the authority of the inspector is supreme ; he may, if he believes it necessary, set aside all orders and by-laws enacted by local authorities.

British Columbia has (1895) a Provincial Board which according to the statute seems to be only advisory, but which, nevertheless, has established very complete and very effective regulations. We will even point out a measure that surpasses those of any other provinces : it is the prohibition of discharging sewerage into any river.

Prince Edward Island has no provincial board. It has a good law respecting vaccination and, by its Health Act, local boards are appointed in two cities, and the Lieut.-Governor-in-council is empowered to appoint a Board of Health in each county.

In the North-West Territories a law relating to hygiene was passed in 1882. Its means are only preventive. The Lieut.-Governor can hinder any person within the Territories from leaving a locality in which there exists a contagious disease. He can also delay at the frontiers any suspicious outsider. He can divide up the Territories into sanitary districts, and appoint medical health officers if he judge such measures expedient.

As you may nevertheless see, gentlemen, by this short and altogether inadequate synopsis of our sanitary legislation, Canada, with regard

to hygienic matters, is striding rapidly in the path of progress. If we recall the fact that it is only since 1880 that the different Provinces of the Dominion have really appropriated the powers that the constitution gives them by allowing the formation of Provincial Boards having the necessary authority to protect public health, we have the right to hope that in the near future Canada will not be inferior in sanitation to other countries.

Gentlemen, I cordially thank you for your close and delicate attention, and, before retiring, renew our wishes of welcome to Montreal and Canada.

THE SECTION OF OBSTETRICS AND GYNÆCOLOGY.

W. Japp Sinclair, M.D.
Professor of Obstetrics and Gynæcology in Owens College, Manchester.

When I received the flattering invitation of the Council of the British Medical Association to occupy this position to-day, which is to me one of distinguished and, I fear, unmerited honour, I began to debate with myself whether I ought to take advantage of the privilege granted to me to open the proceedings of this Section with an address. The occasion seemed at first too great; no subject within my range of ideas appeared adequate. It did not seem fitting that I should take advantage of a meeting of such unique interest—a British Empire Meeting during the Queen's Commemoration Year, in this already historic centre of commercial and intellectual achievement in the greatest of the British Colonies, to give utterance to a formal discourse of mere academic interest, chosen without spontaneity, and labouriously compiled in the library. After much cogitation, however, the feeling grew upon me that there had been in my mind more or less continuously in recent years a subject sufficiently interesting to myself and sufficiently general for the occasion. The subject is so important in its far reaching, practical bearings, in obstetrics and gynæcology, that I became convinced you would hold me justified in pressing it upon your attention, and would find in the interest of the subject matter some measure of excuse for the inevitable shortcomings in my method of handling it. The subject to which I refer is that of the *Injuries of Parturition, the Old and the New;* and I may state at once at the outset, that the reason why it has haunted my mind is the frequency with which, as a gynæcologist, I am called upon to deal with injuries produced by parturition, and the growing conviction that in many, if not in the majority of these injuries, their existence has not appeared to be altogether satisfactorily explained as inevitable, and not a few have been proved by irrefragable evidence to be produced by operative preceedings altogether unwarranted by the circumstances.

A Comparison and a Contrast.—My position will be made more clear by one or two examples, and these lead me *in medias res.* Some time last year I was asked to see a young primipara who was very ill towards the end of the first week of the puerperium. When we met in consultation I was informed by the practitioner in charge that the case had been quite straightforward, from first to last, and in

answer to my enquiries he could not in any way account for the patient's condition, which was as serious as it could be even in a case of the kind. It appeared, in fact, almost or altogether hopeless. On making a physical examination without moving the patient from the dorsal position, I discovered a deep and wide laceration of the vaginal vault, the examining finger passing easily into the tissues of the parametrium. No mention of forceps was made in the conversation we had before seeing the patient, and it was only after the examination and in reply to a question, that my colleague explained why and when they had been applied. It seemed to me at the time that he thought the completion of labour by means of the forceps such an insignificant detail that he forgot to mention it. The child, in this case, was saved, but the mother died.

A few years ago I felt called upon to make several repairing operations on the injured pudenda of a young married woman who came under my care as a hospital patient. She had been by all accounts perfectly sound and active a year before, but meanwhile she had got married and she had become a mother. When I first examined her the uterus was found to be completely prolapsed, and it was so lacerated that the anterior and posterior halves of the cervix projecting from between the nates, looked like two separate organs, and the perineum was torn completely through into the anus. This patient then suffered from dislocation of the uterus, transverse laceration of the cervix, and complete rupture of the perineum. She was treated by Emmet's operation, restoration of the perineum, and shortening of the round ligaments, and then she was fairly comfortable with a pessary. I learned afterwards that this case had been one of normal labour in a primipara, and that the delivery had been effected instrumentally by a *locum tenens* within six hours from the commencement of the pains.

Let us now compare this sort of practice, still possible at the present day, in spite of all our anæsthetics, antiseptics, and perfected scientific apparatus with what occurred in a former and different age.

Mauriceau[1], for example, mentions a case "*Du laborieux accouchement d'une femme dont l'enfant étoit resté au passage, à cause de l'extrême grosseur de la teste.*" He was called in March, 1669, to a primipara, aged 35, who had been in labour eight days. The head was in the cavity of the pelvis, and the child had been dead four days. The patient had been visited and abandoned by three or four surgeons, one of whom had made an incision into the soft parts of the vulva. The obstruction arose from the large size of the child's head.

[1] Observations sur la grossesse et l'accouchement etc. Paris, 1715.

Mauriceau perforated and extracted with the crotchet, and the woman who appeared to be moribund when the accoucheur arrived, lived on for eleven days, ultimately dying of "*une grosse fièvre qu'elle avoit cinq ou six jours auparavant.*" From this circumstance Mauriceau concluded that the patient might have escaped if she had been delivered two or three days earlier, that is to say, if she had been in labour only five or six days.

He relates another case "*De l'accouchement d'une femme qui eut un très-laborieux travail.*" It was that of a primipara, aged 28, who had been in labour two entire days after the rupture of the membranes. There had been ten hours of very strong pains. The head was low down in the vagina and had rested there for twelve hours. The pains had now ceased. "*Quoique sa Sagefemme luy eut donné deux clysteres assez forts, pour tâcher de luy exciter de nouvelles douleurs, et qu'elle l'eût fait aussi saigner du bras suivant mon conseil.*" . . . Mauriceau ordered a strong dose of senna to be administered, and two hours afterwards a powerful clyster. Pains then came on, and the patient was delivered without more ado, "*d'un gros enfant mâle, qui etoit encore vivant.*"

Here then, we have two extremes of practice contrasted, the helplessness of the seventeenth century, and our own resourcefulness at the end of the nineteenth, and yet it may be alleged, not without reason, that there is to be seen in the contrast only one more illustration of how "knowledge comes but wisdom lingers." Such results of our modern practice as I have given in illustration do not make it so perfectly obvious that in obstetrics we are much wiser than our sires.

The work of Mauriceau from which I have quoted, contains the famous case in which he met Chamberlen, who failed to deliver with his forceps a woman with a deformed pelvis, and immediately after fled from Paris.

Mauriceau's practice illustrates then, that of the age immediately preceding the introduction of the obstetric forceps. We may divide the century and a half from the introduction of the forceps to the present time, roughly speaking into three periods: First, from the introduction of the forceps to the discovery of anæsthetics, about a century; second, from the discovery of anæsthetics to the introduction of antiseptics, a quarter of a century; third, from the general introduction of antiseptics in midwifery practice to the present time very nearly a quarter of a century.

Now, if we consider our present position, we have much to congratulate ourselves upon, and yet we may fairly ask if there is not much room for improvement in the use which we make of our resources.

Is not one of the most remarkable things in the history of medical science, during the last quarter of a century, the extraordinary development of gynæcology in its surgical aspect? Gynæcology flourished and has become largely surgical; so largely surgical that Sir W. J. Priestley, my predecessor of two years ago, in the position which I occupy to-day, addressed to the Obstetrical Section a warning and a remonstrance on the too free application of surgical methods to gynæcology. Midwifery has, during the same period, become also largely surgical—too surgical—and a thesis which I shall endeavour to maintain to-day is that gynæcology has become so largely surgical as the direct result of surgical interference in midwifery practice; the accoucheurs are the providers of material for the gynæcologists. I fully appreciate the admirable work done during that time by gynæcological surgeons in dealing with the new growths of the sexual organs, and I do not decry it, but for the material of his ordinary daily labour the gynæcologist has to look to the accoucheur. Last year Dr. Cullingworth did a good service to the medical profession by addressing the Obstetrical Society of London, on the subject of the undiminished childbed mortality in England in spite of our advantages and improved methods of practice. But in addition to the avoidable childbed mortality, there is the very serious question of childbed morbidity, which I maintain and repeat is largely owing to the prevalence of surgical methods in the practice of midwifery. The term "surgical" is employed here with almost exclusive reference to the use of midwifery forceps. It was said by Baudelocque that the midwifery forceps was the most useful surgical instrument ever invented, and with that strong and unqualified opinion we are all more or less in agreement. But like all our powerful remedies, the forceps must be used with circumspection, else disastrous consequences must ensue.

Now the avoidable evils which I maintain are so prevalent at the present time have developed insidiously and largely in consequence of the resources which have come to us in the evolution of medical science. If we sin, it is against the clearest light. If we trace the history of Obstetrics during the last century and a half, and consult the old and many of the new masters on the subject we find their opinions are almost unanimous on the limitations and conditions under which the practitioner should resort to his most powerful remedy. There have been from the beginning fluctuations and fashions in practice, but none in theory.

First period.—In addressing a meeting of English speaking obstetricians one cannot illustrate the theory and practice of the first

period to which I refer without quoting Smellie.[1] In Smellie's time, the men who practised obstetrics were no longer helpless in dealing with the most frequently occurring cases of difficulty, namely, in tedious labour from inertia, or from disproportion between the fœtal head and the maternal passages. In reading Smellie's collection "of laborious cases when the head of the child is low in the pelvis and delivered with forceps," no one could fail to be impressed with the caution exercised in the use of the forceps in obviously suitable cases. Take, for example, the first case, in which he makes his visit, gives his instructions for the night, and then proceeds: "When I called in the morning, I found the child's head advanced lower in the pelvis." He gives in detail his reasons for expecting further progress. He says, "Being called in the evening, and understanding that the pains were still weak and the gossips uneasy, I examined in time of a pain, and found the head was lower." He then describes in minute detail how he applied the forceps and extracted the first child in a twin pregnancy, and concludes: "I used the forceps in this case as a pair of artificial hands to assist the delivery, because the pains were too weak to expel the child." This case very well illustrates Smellie's practice, particularly the patient waiting for the natural efforts of delivery before interference. In another case he says, "The patient, though much recruited, being still weak and the pains languid, I directed the midwife to proceed in supporting her with the broth, and prescribed a cordial mixture without any opiate, to amuse the woman and her friends." In another case he was called to a patient who had been in labour for three days under the care of a midwife. "As soon as I was disengaged," he says, "I accompanied my pupil to the place where I found this loquacious midwife extremely ignorant, without the least tincture of knowledge in her possession. When called to the patient, whose pains were just beginning in this her first labour, she had walked her about and fatigued her so much that she was quite exhausted and the pains had entirely ceased. The midwife complained that her fingers were swelled and painful with stretching the birth, but she did not know how long the waters had been discharged." Smellie gave directions with the object of obtaining some rest for the patient, and early the next morning delivered her with the forceps, "without lacerating her parts or even marking the child's head."

By way of illustration of the theory of the next generation in this period, I may quote from the "Practical Essays on the Management of Pregnancy and Labour," by Dr. John Clarke, published in London in 1793. "Violence offered by the improper use of instruments may

[1] Collection of Cases and Observations in Midwifery. 3 vols. London, 1764.

also become a cause of fever; therefore they ought never to be employed in any case except where they are absolutely and indispensably necessary. He who uses them unnecessarily, and solely with the intention of saving his own time, has much to answer for, both to society and to his conscience."

If instead of accepting an opinion, we prefer to turn to a record of facts in order to draw our own conclusions, let us look into the "Practical Treatise on Midwifery," by Dr. Robert Collins, published in 1835. The author gives an account of 16,414 cases of labour in the Dublin Lying-in Hospital during his Mastership. The rules laid down by Collins for the use of the forceps sound very much like some contained in the most recent German literature on the same subject. He says, "In tedious labours, where the mouth of the womb is fully dilated, the soft parts relaxed, and the head so low in the pelvis as to bring the ear within reach of the finger, if there be a necessity for interference, the forceps may be used with advantage; but ample experience has most fully proved to me, that under these circumstances, uterine action fails but seldom in expelling the child, and that it is only in cases as above described, where the *safety* of the patient *requires assistance*, that we are justified in using this instrument."

In 16,414 deliveries in the Hospital, he met with but fourteen cases answering this description; in eleven of which the forceps were used, and in three, the lever. In the other instances where the forceps was applied the labours were complex.

There are several other situations in which the forceps may be applied with much benefit, as in convulsions, hæmorrhages, etc., where the case is, in other respects suited to their application; these are pointed out in the remarks on the treatment of such labours.

"The forceps was used during my mastership, 24 times, and the lever 3 times, total 27; making the average about 1 in 608 deliveries. According to this calculation, most physicians in private practice would require to use them but seldom as, supposing an individual to attend 4000 cases in the course of his life, which is a greater number than falls to the lot of most men, the forceps or lever would be necessary in little more than *six* cases. I consider the forceps, when used with prudence, a most valuable instrument; but its utility is greatly lessened by the injury so frequently inflicted on the patient, by having recourse to it, where *no* instrument is *necessary*; but *much more so* by using it where, in my mind, it is not only inapplicable, but highly dangerous to the patient's safety."

But it may be objected to the frank acceptance of Collins's rules for

our guidance at the present time, that the childbed mortality under such rules must have been very high. It was far otherwise. After giving an account of the measures adopted to banish or guard against puerperal fever he says, "of 10,785 patients delivered in the Hospital subsequent to this period, only 58 died, which is nearly in the proportion of 1 in every 186; "the lowest mortality, perhaps, on record in an equal number of a similar class of females." Another objection which naturally arises to what some might call procrastination in the management of labour, is the high death rate among the children born under such circumstances; but Collins supplies us with full and exact information on this subject, and the infant mortality is surprisingly small. He says, "The total number of children born was 16,654, of these 284 died previous to the mother leaving the hospital. This is nearly in the proportion of 1 in 58½, which must be considered a moderate mortality under any circumstances; however, when it is considered, that this included not only all the deaths that occurred in children born prematurely, and in twins, but also every instance where the heart even acted, or where respiration ceased in a few seconds after birth, the proportion of deaths becomes *trifling* indeed. Of the 284 deaths, 100 were premature deliveries."

The Influence of the Introduction of Anæsthetics.—The introduction of anæsthetics into midwifery practice marks the opening of such an era that every modification of the obstetric art within the first period sinks into insignificance. Time permits me only to indicate, not to fully detail, the modifications of practice during that time. We find, for example, that Smellie was rather attracted by the use of the forceps, and then he and his pupils initiated a mode of practice which came dangerously near to abuse. The work of William Hunter, who published his "Anatomy of the Gravid Uterus" in 1774, and founded physiological midwifery, produced some modification in the opposite direction, and the opinion brought about through his influence may be indicated by a quotation from his disciple Denman. "It has long been established, in this country, that the use of instruments of any kind, ought not to be allowed in the practice of midwifery, from any motives of *eligibility*. . . . Whoever will give himself time to consider the possible mistakes and want of skill in younger practitioners, which I fear many of us recollect; the instances of presumption in those, who, by experience, have acquired dexterity, and the accidents, which under certain circumstances, seem scarcely to be avoided, will be strongly impressed with a sense of the propriety of this rule."

This is also the position taken up by Collins, from whose work I

have already quoted. There can be little doubt, however, that under these rules the interests of the mothers were not conserved. The practice was to delay too long during the second stage of labour, and this brought about those terrible injuries from sloughing, leading to the formation of fistulæ between the vagina and the bladder, and between the vagina and rectum, which produced such a frightful amount of suffering among women at the most vigorous and useful period of their lives. Collins speaks of using the midwifery forceps only once in 608 cases, but he gives concisely the facts of many cases of cruelly prolonged childbirth, of which the following are fairly typical examples:

No. 504. Was brought to hospital from the country; reported to have been five days in labour; it was her first child; it was dead and the head firmly fixed in the pelvis. She was much exhausted; pulse 110; tongue parched. "The head was immediately lessened," and delivery effected with the crotchet. She sank on the ninth day from admission.

No. 555. Was sixty hours in labour of her first child. The pelvis was defective, and there had been no advance for the last twelve hours; the child's death having been ascertained by the stethoscope some hours previous, the head was lessened and delivery thus completed.

No. 608. The labour pains were very tardy and feeble, producing irritation without causing any dilatation of the mouth of the womb. In this state she remained for thirty hours, after which opiates were given three times at considerable intervals, each time with benefit, and at the expiration of fifty-three hours she was delivered naturally of a still-born child.

We need not go abroad to seek the advice of the masters of the obstetric art during this period, and I need not further multiply quotations. We shall find the great teachers always sound and clear in their utterances. I shall only refer to our own Ramsbotham who comes in with Sir James Y. Simpson at the end of the first period. His great work[1] made its appearance in 1841. He considers the application of the forceps such an important operation, that he strongly recommends consultation "even though a neighbouring, probably a rival, and perhaps not very friendly practitioner," may have to be called in. And he frequently exclaims: "Cautiously and tenderly must this iron instrument be used! . . . . We must remember that one injudicious thrust, one forcible attempt at introduction, one violent effort in extraction, may bruise, may lacerate, may destroy!"

[1] Principles and Practice of Obstetric Medicine and Surgery.

The typical injury of parturition during this period was vesico-vaginal fistula, but there can be no doubt that the not infrequent use of perforating instruments and the crotchet produced bruises and lacerations which, in pre-antiseptic days must have conduced considerably to the maternal mortality. The mistaken practice, also, of "stretching the birth" which I am afraid is by no means a thing of the past, was so prevalent that it must have done infinite injury. By causing minute necroses or lowering the vitality of the tissues it must have opened up the way to bacterial invasion with all its consequences.

Laceration of the perineum must have been occasionally inevitable in former generations as in our time. But special attention appears to have been given to its prevention. Denman indeed refers to its prevention as "the principal object of our attention in natural labours."

With the *second period* commencing with the discovery of anæsthetics, and ending with the general introduction of antiseptics, I have at present comparatively little concern. The obstetrician of that quarter of the century, of whom we may take as a type the late Dr. Mathews Duncan, was much concerned with the mechanism of labour, and this is the only period, if any exists, in the history of obstetrics when the warnings against meddlesome midwifery by the teachers ceased to be as clear and emphatic as they had been in former times. With the beginning of this period, we have the work of Marion Sims marking an epoch in the history of gynæcology. He and his contemporary imitators and his successors were long busy repairing the characteristic ancient injury of vesico-vaginal fistula, for they had the accumulated misery of a whole generation of women to cure or ameliorate. With the end of the period comes the introduction of Emmet's operation, which, according to Jenks, marks "one of the greatest advances in modern gynæcology," an opinion not even yet so generally held in England as it ought to be.

The introduction of anæsthesia did not lead to any great improvement in the practice of obstetrics, the medical practitioner could now relieve the patient from the worst pangs of parturition, and therefore could well afford to wait in normal labour for completion by the natural process. But it was soon found that the production of anæsthesia was not all gain. It was found that the prolonged administration of chloroform brought on inerta of the uterus, tedious labour, and post-partum hæmorrhage. The tediousness of the labour made the "gossips uneasy," and the most conservative of practitioners was too often driven by the appeals and reproaches of the patient and her friends to the application of the forceps. In fact, the conscious-

ness, that the final pangs of labour and the acute suffering which would otherwise be produced by the application of the forceps, could be entirely relieved by the administration of an anæsthetic, had for its practical effect a great extension of operative midwifery. Lacerations of the perineum became much more frequent than under the old practice of delay, and as it was quite unusual to suture these lacerations as is now the universal practice, incontinence of urine owing to vaginal sloughing, was replaced by incontinence of fæces resulting from complete laceration of the perineum. The lacerations of the cervix and vagina and their relation to parametritis were either unobserved or not understood until Emmet taught the medical world their importance. Just as the practice of the first period made material for the special beneficent work of Marion Sims, so the abuses of the second period provided the opportunities which Emmet had the genius to recognize and to use. He was the first to observe and describe the injury that had been inflicted, and to teach the gynæcologist the method by which it could be repaired.

Anæsthetics plus Antiseptics—The advent of the *third period*, that of anæsthetics combined with antiseptics, dates from 1870 to 1873, or somewhat later. About that time began those triumphs of abdominal and pelvic surgery applied to the diseases of women, of which men of our special branches of medicine are so justly proud. The operations in general surgery also took on a new phase, and our students, accustomed to witness in the hospital the audacity with which the modern surgeon, depending upon anæsthetics and antiseptics, could deal with new growths and surgical injuries, were influenced, perhaps almost unconsciously, by what they had seen of operative surgery, towards applying its methods to midwifery practice. There has been little of precept and example to counteract this tendency. Our students in the medical schools are not taught obstetrics and gynæcology in a reasonably practical way, while on the other hand they apply themselves to surgery, theory and practice, from the time they pass the entrance examination until they graduate. They learn surgery which they will never practice, and they will practice midwifery which they have never learned.

But the mischief is not merely negative. If the young practitioner turns to some of our English manuals of midwifery, or to contributions to our medical journals, he is liable to be misled into practice which is actively harmful. It would be a long and invidious task to support this statement by references, but it may be as well to take one or two illustrations. A friend of mine has published a "Practice of Midwifery" as a guide for practitioners and students. The edition

from which I quote is dated 1896. He says, "The perverted old adage that 'meddlesome midwifery is bad' has long stood in the way of an early application of the forceps in uterine inertia . . . . . Rash and inconsiderate measures I would not be thought to encourage . . . . . but we must not let our caution warp our judgment and so delay a comparatively simple and harmless operation until it becomes one that is difficult and dangerous." On the rest of his chapter on the forceps I have no relevant criticism to make, except that it is too much like the summing up of a judge to a jury, to afford a clear, definite and helpful guidance to the student; but in this respect it is by no means an exception among the manuals.

I have already quoted a master of the Rotunda Hospital of Dublin, and I should like to refer for a moment to a phase of midwifery practice initiated, or largely influenced in its development, by another. Dr. Johnston[1] published an account of the use of the forceps at the Rotunda Hospital in Dublin during the year 1875. He says, "There were 113 cases where we considered it advisable to deliver with the forceps, and 83 of these were primiparæ, ... 75 mothers recovered, 8 died, 6 being cases of seduction, fretting; 2 cases of peritonitis. Thirty were pluriparæ: 26 mothers recovered, 2 died." There were 1,025 cases, and the forceps were used in 11 per cent. The maternal mortality is 10 per cent. in the forceps cases. Death in child-bed from "fretting" appears to be a specialty of the Dublin medical school. They have not anything of the kind in Germany, and Fritsch, in his book on puerperal fever, in referring to the Dublin peculiarity, calls it "dummheit." Dr. Johnston goes on to meet the objection that the forceps is a dangerous instrument, and he says, "As a proof to the contrary I may mention that of the 752 cases that have been delivered within the last seven years, in no one instance was injury inflicted by the instruments on the soft parts of the mother." We shall see again how the best practice in the German lying-in hospitals contrasts with this wonderful result. There they have not three times as many deaths from fretting as from peritonitis, but they confess to inflicting much injury on the soft parts by the use of the forceps. After the usual formal caution against rash interference, Dr. Johnston goes on to say, "The more we see of early interference and the benefits arising from it, the more we are induced to persevere in it." He says little about his mortality, which was about double that of ovariotomy in experienced hands. His argument that this operation should not be undertaken by an "unskilful person," introducing a comparison between applying the forceps and tying the

[1] "Medical Press and Circular," January, 1876.

subclavian artery or lithotomy, amounts to a plea for leaving operative midwifery entirely in the hands of a special class.

Facilis descensus averni. We soon find even such an experienced and cautious obstetrician as Dr. Swayne,[1] of Bristol, referring to Dr. Johnston's hospital reports, and expressing approval of the practice of using the forceps during the first stage of labour. Dr. Swayne quotes Denman's aphorism, "The first stage of labour must be perfectly finished before we think of applying forceps," and he declares with evident satisfaction that in no branch of obstetrics have we departed from the precepts and practice of our forefathers as in this.

Further examples might be quoted by the score. The deterioration went on rapidly, until many teachers and writers of manuals seemed to have hardly the courage to speak with clearness and precision, and they talked and wrote as if they had no decided opinion of their own. Their formal cautions and restrictions, more or less explicitly stated to be applicable to the practice of the experienced and skilful, are a mere sham as applied to the untaught young practitioner, and they become a delusion and a snare.

It is only about twenty years since Dr. Swayne referred to the use of forceps in the first stage of labour as a "startling innovation" in obstetric practice; and the midwifery practice of to-day, especially among the working classes in England, is something to wonder at and deplore. The young practitioner sees a woman suffering under the pangs of labour; he can relieve these by anæsthetics; normal labour is a process which requires time; the practitioner does not like waiting, and he has appliances by which he can abridge the process of normal labour; he knows he may produce injuries, but these are in his eyes trifling compared with the injuries he has been accustomed to see treated successfully by the surgeon with the aid of antiseptic appliances, and a laceration can always be sutured if it appears to be of sufficient importance. Why, therefore, should he permit suffering to his patient, and waste his own time? He does not know enough of gynæcological practice to be impressed with the importance of a laceration of the cervix or vagina, or a dislocation of the uterus; that is to say, of the remoter consequences of his well-meant interference. More than that, although he may have attended the statutory number of labours required by his college or university, he has enjoyed few advantages of direct practical instruction and example; he may be unable to diagnose the presentation, so he must trust to force alone; he has seen little or nothing of the puerperal state, so he is hardly in

[1] "British Medical Journal," April, 1877.

a position to appreciate the risk to his patient or to recognise some of even the immediate effects of operative midwifery.

Meddlesome Midwifery.—I have endeavoured to trace the course of change in obstetric practice in England, and to indicate the causes. That practice is now, in my estimation, vastly too meddlesome and mischievous and some reform is urgently required. Probably few men even in the medical profession who do not actually see midwifery practice among the working classes of our large towns, or have their attention constantly drawn to the injuries resulting from their practice, are aware of the actual state of affairs. In Manchester, and the manufacturing towns of Lancashire, the proportion of cases in which the forceps are applied, with or without indications, amounts to five and twenty or thirty per cent. and even more. One of my friends who has a large general practice within the area covered by our Maternity Hospital has been good enough to give me a statement of his midwifery practice for the last ten years, and the proportion comes as nearly as possible to twenty-five per cent. From 1885 to 1889, five years, he attended 839 cases, and applied the forceps in 142, that is, in 17 per cent. From 1890 to 1896, seven years, he attended 900 cases and used the forceps in 246, that is a percentage of 27.3. His rate of forceps delivery is highest in 1896, when he used the instrument 50 times in 150 cases. Another friend, whose practice mostly lies within the same area, tells me that his proportion is at least thirty per cent. The highest figure mentioned to me has been 75 per cent. A busy practitioner whose field of operations lies in one of the largest manufacturing towns in Lancashire, told me, in answer to the question which I so frequently put, "What is the percentage of forceps cases in your practice?" that his was "At least seventy-five per cent." "But," I replied, "you must be joking." "Not at all," he said, "between high and low applications of the forceps, at least seventy-five per cent. "But," I said, "surely you have no appreciable number of cases of application of the forceps at the brim?" "I had three cases only last week, but it is a good while since I had such a case before," and to prove to me that his seventy-five percentage was a fact and within the mark, he promised to give me the exact figures from the record of his cases.

I have been frequently told by practitioners in similar communities, that in the case of a multipara, they allow half an hour to an hour for the second stage of labour, and if the case does not show signs of immediate spontaneous completion, they apply the forceps. Among the gynæcological cases at the Manchester Southern Hospital it is by no means a rare thing to find a young woman suffering from disloca-

tion of the uterus and lacerations of the cervix and of the perineum, whose first labour was terminated by forceps within four to six hours of the onset of regular pains.

Now, before passing judgment on this kind of practice as to whether it is reasonable, or unavoidable, or praisworthy, or the reverse of all that, we must find a criterion of good practice. What means have we of forming an opinion as to the proportion of cases in which we may have to interfere *under proper indications;* that is to say, when symptoms indicate some danger to the mother, to the child, or to both. We must obviously compare the methods of treatment adopted and the results obtained over large numbers of recorded cases. For my present purpose I naturally put before you in the first place facts with which I am conversant and can establish beyond dispute. I have here figures showing the details of two years of the practice of the Manchester Maternity Hospital. The hospital contains only twelve beds for in-patients. The home-patients who form the great majority, are attended by more or less trained and experienced midwives. The midwives have instructions in case of difficulty to send for the assistance of a district obstetric physician, who lives within the area for which she is responsible.

MANCHESTER MATERNITY HOSPITAL.

From October 1st, 1894, to September 30th, 1895.

In Patients—

Total number confined in hospital	183
" " delivered with forceps	12

Out Patients—

Total number attended	1102
District obstetric physicians sent for by midwives, forceps cases.	15

Doctor called in by midwife on account of—

Adherent, or retained placenta	4 cases.
Breech presentation	1 "
Transverse presentation	1 "
Placenta prævia	1 "

From October 1st 1895, to September 30th. 1896.

In Patients—

Total number confined in hospital	177
" " delivered with forceps	21

Out Patients—

Total number attended to	947
" " forceps cases	14

In the home-patient department, in addition to the fourteen forceps cases, the doctor was called in three times to twin cases (second twin transverse). Abortion 1. Retained placenta 2. Post-partum hæmorrhage 1, and shoulder presentation 1. Placenta prævia 1.

Only simple forceps cases are set down in this statement: the few in which forceps were applied after version are not included.

It will be seen from these figures that the forceps deliveries among in-patients are in a comparatively high proportion, but it must be explained that the hospital beds are understood to be retained for

cases of difficulty and danger; hence a large proportion of the women admitted have a history of difficult or operative labour in the past. The proportion of forceps deliveries among these in-patients is almost exactly nine per cent. and no woman died after the use of the forceps. The proportion of forceps deliveries among the home-patients in the charge of the midwives may be considered the normal requirements in such a community as ours. The midwives are under strict supervision. Their credit is at stake if they lose their heads and send too frequently for medical assistance, and their position is in danger if harm comes to the mother or child by want of knowledge and judgment in failing to send when necessity arises. Now, in 2049 home-patient deliveries, the forceps had to be applied by the obstetric physicians 29 times; that is as nearly as possible, 1·4 per cent. I have already called your attention to the fact that within the same area of population, but among the class of people who can afford to pay for private medical attendance, the proportion of forceps deliveries is from five and twenty to thirty per cent. Such a striking contrast surely supplies food for reflection and calls for explanation. Another point, which I mention with some diffidence because I have only my own figures to offer by way of illustration, is the remarkable difference in the proportion of forceps deliveries among the poor as compared with those in a better position in life. I have for a long time made cautious inquiries with regard to the history of the confinements in taking notes of my private gynæcological cases, and my conclusion is that the hospital patients are delivered with forceps more than ten times as often as the class of women who consult the gynæcologist privately and may therefore be assumed to be in a position to pay higher fees to the accoucheur. If this result should be found on extended enquiry, to coincide with the experiences of others in a similar position, it is a not unimportant fact in guiding our judgment to a conclusion as to how far we may have drifted astray from right and reasonable midwifery practice at the present time, and as to one cause at least of the aberration.

My attention was first attracted to this subject about twelve years ago, and I have given it some attention ever since. I was then assisting an experienced accoucheur in a case of normal labour in a primipara. As far as I could judge, nothing could be more typically normal than the labour up to the point of what appeared the approaching completion of the second stage, and yet I was asked to assist in an obstetric operation by administering an anæsthetic, although my senior had made previously some joke about the "healthy young animal" type of the pains, and they as far as I could see had not

changed from that type. He applied the forceps, and by repeated efforts at traction effected delivery, lacerating the vagina and perineum. The immediate results were those we are familiar with including an attack of parametritis, the remoter effects were prominent cicatrix of the vagina, and chronic bad health. I am reminded of the history from time to time by being consulted by the patient.

My enquiries into the need for such operations and their consequences have gone on intermittently ever since, and I have noted with great satisfaction the rising protest in Germany against the abuse of the forceps.

There is now a considerable literature on the subject of forceps deliveries. There is not time, nor is this quite the occasion for going into many details on the subject. I may, however, make some concise reference to certain facts recorded in this literature, as I consider it of the greatest possible value to those who may wish to form an independent judgment on the matter, on account of the large amount of material and the exactness with which the whole matter is put before the reader. In 1889 Münchmeyer[1] published a valuable article in which he gave an account of the cases of labour completed with forceps in the Royal Hospital for Women in Dresden, from 1883 to 1888, and the last of this series of papers which I have seen is that by Dr. Béla von Walla which he calls "Studien im Auschlurs an 115 Zangen operationen." It appears in the fifth volume of the *Monatsschrift für Geburtshülfe und Gynæcologie.* It is an account of the cases delivered with forceps in the University Klinik for Obstetrics and Gynæcology at Buda-Pest. From the 1st September, 1882, to December 31st, 1895, there were 11,064 women confined in this hospital. Of these labours 115 were completed with forceps, that is, in the proportion of 1·04 per cent. over the whole time, and in 1895 the percentage of forceps operations sank to 0·32. It is instructive to compare with this the frequency with which forceps operations are performed in other German university kliniks, and also to compare the most extreme cases with our own general practice. Wahl, in his paper continuing the report of the Dresden Hospital begun by Münchmeyer, gives an interesting table showing the relative frequency with which the forceps have been used at various maternity hospitals:

Kézmarszky, Buda-Pest, 1874-1882	1·4 per cent.
Abegg, Danzig, 1872-1885	2·2 "
von Winckel, München, 1884-1890	2·6 "
Leopold, Dresden, 1889-1894	2·56 "
Gusserow, Berlin (Charité), 1882-1886	2·66 "
Leopold, Dresden, 1883-1888	2·8 "

[1] "Archiv für Gynäkologie," Vol. 36.

von Winckle, Dresden, 1879-1883	3·	per cent.
Ahlfeld, Marburg, 1881-1888	3·5	"
von Rosthorn, Prag, 1891-1894	3·63	"
Stuttgarter Geb, Austalt, 1872-1885	3·7	"
Braun, Wien	4·3	"
Kehrer, Heidelberg	4·6	"
Olshausen, Berlin	4·96	"
Fehling, Basel, 1887-1893	5·33	"
Sutugin	6·	"
von Säxinger, Tubingen	6·5	"
Olshausen, Halle	8·4	"
Schauta, Innsbruck, 1881-1887	9·16	"
Schultze, Jena	11·6	"

As Wahl points out in the contribution from which I am now quoting, the great difference in these figures indicates a marked difference of opinion as to what are the indications for the use of the forceps. In Budapest and in Dresden, the indications for the forceps are very strictly and narrowly defined, whatever may be the rule at other institutions. At some of the medical school hospitals it is unfortunately thought right to apply the forceps in cases of normal labour in order to give instruction to the students.

This is an excellent account of the forceps treatment of labour in the Dresden Hospital which is given by Wahl.[1] It is, as already mentioned, in continuation and supplement of Münchmeyer's report six years before, and deals with the cases delivered within the hospital from 1889 to the end of 1894—six years. The whole number of cases was 9,061 ; forceps were used in 232 cases, that is, in 2.5 per cent. An examination of the details gives some extremely interesting information, which, however, is not altogether relevant to the present purpose. The forceps were used only on certain exact conditions and indications. The cervix must be completely dilated ; the membranes ruptured, and the sagital suture as nearly as possible in the antero-posterior diameter of the pelvic outlet. There were 212, or 91.5 per cent. of typical cases for the application of the forceps ; there were only 17 cases in the whole 9,000 in which the forceps were applied while the head was at the pelvic brim. The final indication for resorting to forceps was always danger to the mother, to the child, or to both, and three to four hours was the period allowed for the second stage of labour. At Buda-Pest the time allowed for the second stage was five to six hours.

Remarkably interesting, too, is the information contained in this report regarding the morbidity and the mortality of both mothers and children. The results for both are as good as any ever published. The only point, however, to which I wish specially to call attention is the number and extent of the lacerations and injuries which are attri-

[1] Uber die entbindungen mit der Zange an der Königh, 1894. Frauenklinik in Dresden in den Jahren 1889, bis 1, Januar 1896. Archiv für Gynäcologie, Bd. 50.

buted to the forceps under conditions in which observations could be exactly made. Münchmeyer reports 85 per cent. of lacerations, including in this episiotomy performed by himself to prevent worse lacerations, and those small injuries which could be repaired with a single suture. Schmidt found 84.6 per cent. of lacerations of the vagina and perineum, two of the latter complete, in 132 forceps operations at the Klinik of Basel. The latest results at Dresden, as given by Wahl, appear to be somewhat better. In 232 cases the percentage of injuries was 81.4 per cent. These included injuries to the vagina, to the cervix, and to the perineum, some of which were slight, others extremely severe. There were lacerations of the cervix which required immediate suturing to stop the hæmorrhage, and there were six complete lacerations of the perineum. *Only 18 per cent of the cases were uninjured.* Münchmeyer may well refer to the application of the forceps as the bloodiest operation in medical practice, and Wahl quote with approval the opinion of Von Winkel, that even in the hands of an experienced operator, the forceps is an instrument by no means devoid of danger. Compare these results of cautious forceps delivery with Dr. George Johnston's who had 752 forceps cases "without once injuring the soft parts" and yet he applied the forceps in the first stage.

It would be tedious and serve no good purpose to go on multiplying experiences. All that we see and all that we read seems to point to the fact that we have replaced the one great injury of parturition of former generations—vesico-vaginal fistula, by a host of others, vesico-vaginal fistula by laceration instead of by sloughing included. There is a general impression that sloughing was very common in former generations owing to long continued pressure. It is extremely difficult to get any information on the relative frequency. I have gone through the 700 cases which form the material of Mauriceau's work, and have found only six cases in which incontinence of urine resulted from tedious labour. The utero-vesico-vaginal fistulæ which we have to deal with are not extremely rare, and these are invariably produced by premature application of the midwifery forceps in primiparæ. There can be no question that many other such fistulæ are produced, but we never see them, because the patients die in childbed. In addition to the lacerations, and disablement which comes from them as lacerations, there are numerous other acute and subacute troubles, such as parametritis and cicatrisation. When we see such injuries with attendant displacements so frequently produced, when we think of the extreme differences in the practice prevailing in one country and another, or among one class of society or another,

is it not reasonable to conclude that there must be something seriously wrong with our theories or our practices, or with both ?

My present purpose is not so much to attempt to prove anything to demonstration, as to call attention to certain obvious evils, and by a plain statement of facts to establish a *prima facie* case for closer investigation of the question,

> "That from Discussion's lip may fall
> The law which working strongly binds."

I may, however, without irrelevance remark now, that I have myself a firm conviction that serious evils exist ; that a vast amount of unnecessary misery is produced, and that it should not surpass the wit of man to find a remedy. I am quite aware of the difficulties that meet the individual practitioner. I have been too long a general practitioner, before specialising, to have missed my share of those experiences, and perhaps it may raise a smile if I say, from that point of view, " that the gossips being uneasy," in the language of Smellie, is one of the real difficulties in the way of reform, if by " gossips" we mean those interested in the patient who may have some sort of right to ask questions or claim the privilege of offering well-meant but ignorant suggestions, concerning the " exhausted" condition of some vigorous young women in the first hours of a normal labour. It is only the formation of a strong professional opinion, and then a public opinion that will enable the individual practitioner to hold on to the proper course without ruinous injury to his professional position and character. But I believe that just as twenty years ago we met with men who feared to suture a spontaneously lacerated perineum, lest they should be blamed for producing the injury, and now among their successors meet with few who would not fear to be blamed if they did not suture such a lacerated perineum ; so the same process of formation of opinion by the practice of men of clear views and strong will with regard to the forceps, would bring about a similar reform.

Among the causes which give rise to the present abuses must be put in a high place our over-confidence in antiseptics. Too many of our practitioners think that they can do anything in the way of manipulation, digital or instrumental, if only they use some chemical solution with sufficient copiousness. This, I am afraid, is a fatal delusion. Such at least is the conclusion I am compelled to draw from my own experience of cases of puerperal fever seen in consultation. It is a pathetic and humiliating sight to see a healthy young women dying in childbed, with her little wedding presents as yet untarnished around her, *because* the medical attendant has thought it

right to risk the production of injuries in a first and normal labour under the mistaken impression that he can prevent bacterial invasion by means of some weak solution of permanganate of potash and mercury or other chemical which he calls an antiseptic. I believe in antiseptics certainly, but my faith does not carry me to the extreme point of the schoolboy's definition as to the faculty of believing what we know cannot be true.

But the great difficulty in the way of either prevention or reform of abuses is the want of systematic practical instruction in our Maternity Hospitals, the absence of the precept and example of the best available men at the bedside. The consequence is that our young medical practitioners at the commencement of their careers have to learn midwifery by a process which amounts to involuntary experiment upon their patients. While the German medical student learns midwifery and gynæcology as he learns surgery, and the subject ranks with medicine and surgery in the examinations, we are still content to insist as far as practical instruction in obstetrics is concerned, merely upon a formal compliance with certain regulations which do not necessarily imply practical knowledge worthy of the name.

The solution of the problem before us must sooner or later be attempted ; that problem is, " How are we to proceed in order to reconcile the avoidance of injuries to our patients which may carry important consequence to life and health in their train, with the use of the scientific resources of our generation which should enable us, under proper safeguards, to soothe and curtail the mental and physical suffering which at the best are inherent in the process of parturition ?"

You have heard what I have to say. I do not assume the position of guide or philosopher ; I take the advantage of the opportunity you offer me to call the attention of the profession to what I believe to be a crying evil. If you, the professors of the science of obstetrics and gynæcology, believe the evil exists, you will find the remedy.

THE SECTION OF PHARMACOLOGY AND THERAPEUTICS.

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Past and Present views as to the Actions of Medicines.—The Section of Pharmacology and Therapeutics over which I have the honour to preside, is one of those which is not always constituted at the Annual Meetings of the British Medical Association. The fact that one side of its work—the therapeutical—can be dealt with in other sections is doubtless the chief cause of this; a second may be a certain lack of interest in Pharmacology. Comparatively little attention has been given in England in recent years to the cultivation of knowledge concerning the method in which remedial agents act. In most countries, however, a constantly increasing interest is being shown in determining, not only the action of remedies, but the mode of their action. The establishment on this side of the Atlantic of that admirable periodical "The Journal of Experimental Medicine" in which Pharmacology takes its place with Physiology, Pathology and Medicine, is a valuable sign of this interest, and my great pleasure at being honoured with the office of President of this Section is heightened by the feeling that by its constitution on this occasion evidence is given of the appreciation of the scientific as well as the practical side of therapeutics in this country.

The basis of therapeutic practice is, or ought to be, observation, but therapeutic observations are commonly made on experiments or trials which are the outcome of opinions held as to the nature of disease and cure, and these opinions are apt to bias judgment. Even when we give long used drugs, we commonly make trial of them under new conditions; each trial is accompanied by some pre-conceived idea, and hence practical therapeutics has always been largely influenced by views as to the nature of disease and cure. Now amongst these views, none have been more potent in their effects on practice than those relating to the manner in which remedial agents act; and since recent discoveries in the area common to physiology, pathology and pharmacology have an important bearing on these views, a few remarks on present and past opinions as to the method in which medicines act, and on the influence of these opinions upon therapeutics, may, it seems to me, be a fitting introduction to the work of the Section. As

regards past views, however, I will confine myself, as befits the year in which we meet, to the period of our Queen's reign.

Sixty years ago.—Sixty years ago the main lines of the pharmacological views now prevaling had already been laid, though the chief postulate on which they rested was by no means universally granted.

One of the ablest Pharmacologists of the day—Pereira—writing in 1836, set forth general views with regard to the action of medicines which are for the most part accepted now. They act usually, he held, after absorption, and being carried by the blood to the various parts of the body, influence the tissues and therefore, the functions of the organs which, from some unknown cause, have a special attraction for them. The exact methods in which they thus influence tissues, he considered, were involved in impenetrable mystery. But the very basis of this view as to the action of medicines, their absorption from the stomach prior to the production of their effects, was not accepted by many eminent observers. The discovery of the marked influence which may be produced owing to the conduction of impressions in a direct or reflex manner had greatly impressed men, and in the absence of knowledge we now have as to the nature of disease, there were difficulties in accepting the view with regard to absorption. Travers, for example, pointed out that a punctured wound causes tetanus, as strychnia does, and he argued that as it was not likely the effects were produced in different ways, and as in the case of injury, there could be no absorption, the influence of the strychnia was not due to its absorption. Brodie and Todd Thompson held similar views. They did not indeed deny that absorption takes place sometimes, for the presence of active principles taken by the mouth in the secretions of different parts of the body had long been shown. But they held it probable that the effects of such medicines as strychnia and hydrocynic acid on the various organs were due to influences conducted by the nerves from the stomach, and not to their absorption.

Pereira pointed out that medicines may act in other ways as for example by reflex influence, by simply adding some substance to the blood which is wanting in it, or by producing chemical changes, but he thought that the chemical constitution of a substance bore no important relation to its action.

The views he enunciated with regard to the method in which medicines act gradually gained ground; but Headland, writing on the action of medicines eighteen years later, still considered it necessary to prove at considerable length that drugs when taken internally act for the most part only when they have been absorbed.

In his philosophical work he drew attention to the necessity for

distinguishing between the knowledge of the action of drugs in health and of their effects in diseased conditions; and he pointed out that the former is insufficient, inasmuch as the conditions of action are quite altered by disease; and whereas, Pereira adopted a physiological classification, arranging medicines according to the method in which they influence organs, Headland classified drugs according to the manner in which they operate in disease, trying to indicate the methods in which they influence pathological conditions so as to combat the effects of disease.

The views Headland upheld as to the necessity for knowledge as to the method in which drugs influence diseased organs and tissues have borne good fruit, though his hypotheses have not been for the most part sustained by further investigation. Let me here point out that the widening of research into the effect of drugs so as to include their influence on disease as well as health, has led in Great Britain to the introduction of a new word, or rather to the modification of an old one. The term "Physiological action" can only be applied to the action of an agent on healthy tissues and organs. It cannot include the effects produced in diseased conditions. Yet investigations are constantly made concerning these effects entirely apart from any consideration of curative influence. To express that department of knowledge which deals with the general action of drugs, apart from their therapeutic use, the word "Pharmacodynamics" existed, but it was felt to be in several ways unsatisfactory, so the word "Pharmacology," which had been hitherto used as synonymous with "Materia Medica," was borrowed as a new name for the growing department, and made to include the action of remedial agents in health and disease, and this too in a wide sense, since it deals with the causes as well as the conditions of disease.

In the early part of the period of which I speak, the Brunonian doctrine, that all medicines really act as stimulants though in a varying degree, no longer held its ground, and faith in the Rassorian view, that remedies are either stimulants or contra-stimulants, was waning fast. But, perhaps owing to the past prevalence of these and still older doctrines, we find that the word "stimulant" was used in a somewhat different sense from that in which it is now employed. It was constantly used in a vitalistic sense to indicate something which called forth the unknown vital force. Medicines were ranked as stimulants without any definite view that they increased activity of function in any particular part of the body. And many other words as "Sedatives" and "Tonics" were used in a looser manner than at present.

The examinations given of the mechanism by which drugs act were in many instances founded on mere supposition. Effects we now know to be the result of the direct action of an agent on glands or nerve endings for example were then supposed to be due to impressions conveyed directly by nerves from the place at which the drug came into contact with the tissues. On the other hand, the important part really played by the conduction to the periphery of effects produced by drugs on nerve centres was little known.

Then again, there was a widespread impression that the capillary system was the chief seat of action of most drugs. It was thought by some for example, that the effects of mercury, iodine. as well as colchicum, bark, and antimony, were due chiefly to their action in contracting the capillaries; and to certain drugs, the exact effects of which were quite unknown, was attributed a power of stimulating the capillaries generally, so as to cause increased flow of blood through them. The real power which many medicines have of dilating or contracting vessels was unsuspected.

The chemical theories of the day, especially the ingenious suggestions of Liebig for explaining the effects of certain agents, added to the diversity of views which existed as to the method in which medicines produce their curative effects, and the investigations into physiological action, though well commenced, had not advanced far enough to curb erratic theories.

The views taken as to the powers and uses of various drugs differed much. Mercury, for example, was regarded by some as acting directly as an absorbent; by some as dissolving fibrin and corpuscles, and thus combating inflammatory processes and promoting absorption, whilst it antagonised syphilitic poison if present. Other observers again regarded it as a tonic, exerting its influence by contracting the capillaries. Digitalis was regarded by many as a sedative to the nervous system, by some as acting chiefly by depressing the heart's action. This diversity of views existing in the early Victorian Period was well reflected in the diversity of practice we find prevailing.

The Progress of Pharmacology.—The laborious work of many observers quickly added much to what was known when Pereira first wrote concerning the physiological action of drugs, and their effects in pathological conditions. It became evident that a drug may depress or excite the function of one part of the brain and not another; that by acting on one we may inhibit the action of another part without acting directly on it, or remove the inhibitory action already existing. That in the heart a drug may act on the muscle

and strengthen its action, and yet check its speed by influence exerted elsewhere; that a tonic acts by definitely increasing the nutritive changes in certain parts. And so the words "stimulant," "tonic," and many others of a similar kind, acquired more precise meanings, and became associated with the idea of distinct effects on various parts of the body structures.

Then, too, the exact tissues in various organs on which drugs act was determined with constantly increasing certainty. It was shown, for example, that one drug may act on the nerve-endings in a gland, another on the gland structure itself. As a consequence, many old hypotheses, founded on incorrect suppositions, died out, and with them disappeared the practice to which they had led.

But increasing knowledge concerning the action of drugs did much more than relieve from the incubus of groundless theories and the consequences thereof. It led to new and valuable knowledge as to the therapeutic uses of drugs which simple observation had failed to discover. Strychnine, for example, had long been used in paralysis and other ailments on account of its known action on the spinal cord, discovered by Majendi. Yet for many years it was not employed in cardiac and respiratory troubles. When, however, it was shown by P. Rokitansky that it stimulates the respiratory centre, it was tried in pulmonary diseases, and it has since become one of the most largely used and important respiratory stimulants in serious lung disease.

The history of digitalis is very interesting as shown in the bearing of pharmacology on the knowledge of the real therapeutic use of drugs. Withering, by careful observation, obtained a very good knowledge of the action of digitalis. He not only pointed out the conditions in which it is of service, but even indicated the nature of its cardiac action; for he showed that it is of special use (as a diuretic) when the pulse is feeble and intermitting, but seldom of service when tension is high, or as he put it, "in those with a tight and cordy pulse." This was in 1785. Nevertheless, for more than fifty years later it was usually regarded as a cardiac depressant, and in many books on medicine recommended under entirely wrong views as to its real therapeutic effects. It was not until its true pharmacological action was discovered by experiment that its true therapeutic rôle became generally recognised and utilised. A well observed therapeutic fact is often neglected until pharmacology points out its cause and value.

Then again, the new department of pharmacology added largely to our agents for treating disease. It was the powerful physiological influence found by experiment to be exerted on animals by the many

active principles and drugs discovered in the early part of this century which led to the therapeutic trials of many, and the introduction of some, into the pharmacopœia, and Brunton's discovery of the value of amyl nitrite, which was the outcome of the examination of the nitrites by Gagee, is a well known instance of the value of pharmacological research.

But it was to an advance of knowledge beyond that which Pereira thought possible—to the recognition of a connection between the chemical constitution and physiological action—that we owe the discovery in recent years of a large number of substances having valuable therapeutic properties. The chemist and pharmacologist have worked together; it has been found possible to find out the influence of various chemical groups and to join them together in various ways, so that the products shall have, to some extent at least, the effects which might be anticipated from the influence of groups. Most valuable additions have been made to our therapeutic agents in consequence.

At one time it seemed that with increasing knowledge of the nature of disease, of the action of drugs, and of the construction of remedies, pharmacology would march straight to victory, that we had only to accumulate information relating to antiseptics and to determine more accurately the influence exercised on tissues and organs by groups and compounds, to acquire the power of combating all forms of evil. There seemed ground for hope that, as the pathologist pointed out the causes of disease and the changes produced in the organs by it, the pharmacologist might be able to devise drugs which should remove the causes or antagonise their effects.

The knowledge of the method in which drugs remove the cause of disease and counteract its results, did indeed greatly increase, so, too, did our power of lessening suffering; but something more was required. We could not combat the evils produced by disease at all essential points of attack, and our power to stay its progress was therefore very limited. And no way was made in the discovery of substances capable of generally antagonising the functional changes and pathological conditions characteristic of special forms of disease. No drugs were found acting as mercury does in syphilis, and the method of action of this and also of some of the best known of our remedies has remained undetermined.

Influence of Recent Discoveries on Pharmacology.—But in very recent times, owing to the investigations of pathologists and physiologists, light has come. The discoveries made concerning the curative influence of certain animal substances, such as thyroid gland, and con-

cerning toxines and the anti-toxines mark a new departure in therapeutics. How do they affect existing views concerning the action and uses of drugs? Strong views have recently been expressed on this point.

Dr. Saundby, for example, considers that though the recent discoveries with regard to pathogenic organisms and their products open up to us an altogether new prospect in therapeutics, the system of pharmacology is about to pass into the limbo of the forgotten, and Prof. Behring, of Marburg, thinks that in the light of serum treatment all our older views must vanish. Cellular pathology, he says, has become unfruitful for therapeutics; it is vain to treat the organs which are affected. Serum treatment, if we may judge from the resumé of his paper, which was read at the recent "Congress fur innere Medicin" at Berlin, is alone efficient. If Behring's view as to its nature is correct, its study is almost outside the boundaries of pharmacology, for he holds antitoxine is not a definite chemical compound, but a *quality*, inherent in certain albuminous substances as magnetism is in the magnetic oxide of iron. If antitoxines are powers, not substances, we are almost carried into a new world in which pharmacology, as at present understood, has no place. There seems little probability that the view of the enthusiastic supporter of serum treatment has any real foundation, and as I do not know the reasoning that has led to its adoption I shall not attempt to controvert it. The general bearing, however, of treatment by animal substances on our ideas as to the methods in which medicines act is worthy of consideration. My contention is that the new discoveries, whilst extending the domain of pharmacology, are in no way opposed to its long established teachings; that the various animal substances act on the same lines as the older remedies, though they possess certain properties which are wanting, or less apparent, in the older drugs, and that even if the most sanguine expectations of their powers are fully borne out, the utility of the pharmacological knowledge already acquired will not be lessened.

Concerning the action of thyroid and allied substances, I need say but little. Physiological and pathological investigations indicate that the ductless glands, and even those which furnish excretions, supply some material which passes into the blood, and it is just possible that other tissues do the same. These internal secretions are probably necessary for the chemical transformation of other substances in various parts of the system, and if the supply be defective, certain ailments result. By giving thyroid gland we can certainly remove the effects due to an insufficient supply of its secretions, and

reason has been given for believing that several other animal substances and their extracts yield, when given internally, material wanting in the blood, and thus prove of advantage in some diseases. But we have here no new pharmacological principle. The administration of a remedy for the purpose of adding something to the blood, which is not present in sufficient quantity, is not a departure from ordinary pharmacological ideas or therapeutic proceedings. In the case of the thyroid, the substance which contains the active material giving its power, has been separated, and we shall have an account of it from Dr. Hutchinson.

The effect of toxines and antitoxines requires to be more fully dealt with, but before comparing their action with that of other medicinal substances, let me point out opinions formed in late years with regard to the intimate action of the latter.

In the first place it has become clear that for the changes in functions or tissues we must chiefly look to the effects produced by drugs on the ultimate tissue elements, or cell protoplasm that is, and Schmiedebery long ago pointed out that this influence is probably to some extent molecular. The presence of molecules of elements or chemical compounds seems to produce some effect on those of the protoplasm which leads to change in function of the tissues into which the protoplasm enters. But this change lasts usually as long only as the molecules of the elements or compounds are in contact with the organic elements, which commonly work on in a normal manner after the excretion of the drug molecules. We can show this experimentally. If the gastrocnemius of a frog is soaked in a dilute solution of nitrate of sodium, its function of contractility is powerfully altered, yet as soon as we wash out the nitrate the normal function of the muscle is restored. What the nature of the relation is between the molecules of the drug and the molecules of the protoplasm, we do not know. Sometimes, undoubtedly, chemical changes occur. For example, the protoplasm may withdraw oxygen from the drug, and in this way its functions may be modified, and the drug itself may be altered in composition. From what we know of the action of chemical compounds on protoplasm, it is quite possible that a compound at times forms some kind of chemical union with the protoplasm, and perhaps even when there is no apparent chemical change, as in the case of the nitrite, there is one in reality. But there is also reason for thinking that the molecules of a compound may influence the protoplasm in a catalytic manner. We know, for example, that if dilute hydrochloric acid be added to an aqueous solution of methylacetate it leads to the decomposition of the acetate into

alcohol and acid without itself undergoing any alteration. It is quite possible that pharmacological agents may likewise influence chemical processes in the protoplasm without themselves being changed, but however this may be, it seems clear that the primary effect of remedial agents is exerted through their influence on cell protoplasm, the nutritional processes of which are altered, with the result that the tissues into which the protoplasm enters is altered in function.

In some instances their continued contact seems to give rise to further changes, something occurs which causes the drug molecules to lose their usual influence, and tolerance of or immunity to the drug is produced. How far this immunising effect of drugs extends we do not know. It seems to occur in certain people only in the case of arsenic. The alkaloid morphia is the best example of it, but it has been shown by Ehrlich to be produced by the two vegetable albuinoid substances, ricin and abrin. On the cause of immunisation we can only speculate. The cell protoplasm may, owing to some alteration in its functions, expel the drug with unwonted quickness, or it may destroy it, but it seems more likely that some change takes place in the nutrition of the cell which renders it insusceptible to the influence which under normal conditions alters its functions.

Turning now to the toxines it may be noted that they disturb the functions of the various organs like other pharmacological agents. They have a definite physiological action, and there is no reason for believing that they act on tissues in a manner fundamentally different from other medical agents. They have indeed a more marked power than most drugs in producing immunity. It is impossible to say whether in this respect they act like ordinary drugs, but it can hardly be doubted that they produce their effects in a similar, if not in the same way.

A third property which toxins have has not been shown to be common to the medical agents hitherto employed. They lead to the production of antitoxins, but how, we know not. Protoplasm has the power of altering substances which come in contact with it, and it is possible to imagine that by some subtle chemical influence the toxin is converted into a substance directly antagonistic to it, in physiological properties. But it seems far more probable that antitoxins are produced by the protoplasm itself under the influence which the toxin exerts upon it. It is shown that the serum of blood does contain a bactericidal substance, and many years ago Hankin pointed out that the blood of certain animals normally contains what he calls a "defensive proteid," to which Buchner subsequently gave the name of "Alexin," and which practically is an antitoxin. If cell protoplasm

has the property of thus normally producing such defensive material, it is not difficult to imagine that under the influence of certain toxins it may produce special antitoxins.

The difference between the effects of the chemical compounds which form the active principles of hitherto used drugs and the toxins, with regard to the production of antitoxins, is probably connected with the difference in chemical constitution. It is easy to understand that unstable albuminoid bodies related in composition to the protoplasm itself are likely to have special influence in producing those changes which lead to immunity and in causing the formation of antitoxin, which substances of a similar chemical composition have not. This is the more likely because, although we have no proof, so far as I am aware, that any of the older used drugs lead to the production of antitoxins, there is reason to believe that certain vegetable albuminoids are capable of doing so. Ehrlich states that the toxalbumins, abrin and ricin, derived respectively from castor oil and jequirity seeds, not only cause immunity but the formation of an antitoxin in the blood which protects from the poisonous influence of these two substances.

The method in which antitoxins act is as yet shrouded in obscurity. They may be to a certain extent destructive to the organisms giving rise to disease, as quinine probably is in ague, but they seem to produce their special effects by antagonising the toxins these organisms produce, and they differ from the older drugs in exercising a wider and more rapid influence. They seem to antagonise the toxins at once at all essential points, instead of counteracting their effects at one or two points only.

There is good reason for believing that they do not neutralise each other as an acid neutralises an alkali. At least Calmette has shown that neutralisation does not obtain in the venins and antivenins the action of which very closely resembles the toxins and antitoxins. For he finds that if a mixture of venin and antivenin, which is non-toxic because of the antagonistic influence of the two substances, be exposed to a temperature of 68°, the power of the antivenin is destroyed, but not that of the venin, which now can exert its toxic influence. It seems probable that the antitoxin acts on the molecules of the protoplasm in some way, and prevents the toxin exerting its ordinary influences. There is no reason for believing that its effects are produced in a manner different in kind to those of other drugs. The action then of the new animal substances seems not dissimilar from that of our older remedies.

But their powers widen our ideas concerning the methods in which medicines may act. They point also to possible explanations of much

which has hitherto been inscrutible. May it be, as has been suggested, that drugs do something more than influence molecular conditions; that they cause the production of something which is itself an active agent. That for example in the case of mercury it is not the metal itself which antagonises the syphilitic poison, but something which it causes the protoplasm to produce and pour into the circulation? May it be again that "toleration" is due to the fact that the older drugs as well as toxins lead to the production of a kind of antitoxin? What may be the outcome of the new discoveries we cannot distinctly see, but of this we may be quite sure, that even if the sanguine anticipations concerning these are realised, the pharmacological information which has been acquired will in no way lose its therapeutic value. We shall want drugs even though we have serums, for symptoms will have to be met, and the very character of serum precludes the hope that they can be used to treat all forms of disease.

And of this we may also be certain, a large number of observations which are the outcome of the enthusiasm excited by the new discoveries, will be fallacious, for observations, as I have said at the commencement, are biased by pre-conceived ideas. The more full our knowledge of the mode of action of the new agents the better our information about their effects on the organs and tissues—their pharmacology that is—the less likely are our judgments concerning their effects to go astray, and we must wait for this fuller information before we can use them without constant fear of evil. Knowledge of the action of drugs must be combined with careful observation of their curative influence.

It is the combination of pharmacology with therapeutics which gives the value to the work of this section, and we shall have several important discussions which will probably illustrate this. That on the treatment of syphilis will show the difficulties we labour under from defective knowledge of disease and drug action, but it will show too how patient observation, long continued, may, to some extent, make up for such defective knowledge. For nearly 300 years the use of mercury in syphilis has been debated, but because the nature of syphilis and the action of mercury was quite unknown, the utmost divergence of opinion existed in earlier times as to its use. On both points some knowledge has been gained, and differences in view are not now so wide as heretofore, yet we shall probably find that on some points observations have led to very different results.

The discussion of the treatment of insomnia will illustrate our indebtedness to the combination of pharmacological and chemical knowledge. For most of our new hypnotics we are indebted to this

joint working. Objection is sometimes taken, and with justice, to the multiplicity of similarly acting drugs brought before our notice, but it may well be that by careful observation of the exact properties of the many hypnotic agents we have now to choose from, it may be possible to fit each one in its own niche, to determine, that is, the exact conditions under which each one acts better than the rest.

The third subject for discussion -Diuretics—has in recent years been illumined by pharmacological investigations, which, though they may not have cast fresh light on the effects and importance of increasing kidney secretion, in certain forms of disease have nevertheless made more clear the manner in which diuresis may be brought about, and the indicated tissues affected in the process, thus enabling us to judge better of the kind of diuretic which should be used.

By these discussions, and the information given in the many papers which are to be read, I think we may confidently hope that something will be added at the sectional meetings to the general stock of knowledge concerning the cure of disease and the relief of suffering which is the aim and end of medicine.

THE SECTION OF PATHOLOGY.

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On the Progress and Results of Pathological work.—On such an occasion as this one is naturally tempted to look back on the history of pathology during the last sixty years, but I hope that you will not expect me to follow the fashion in this respect. To trace the history of pathology during the last sixty years would be to follow the science practically from its commencement and to go back to a state of matters which it is almost impossible for us now to realize. Even going back to the time when I was first introduced to the study of pathology, some twenty-five years ago, the changes which have taken place are enormous. At that time the lectures on pathology consisted practically entirely of morbid anatomy—long descriptions, for the most part very accurate and not materially different at the present day, were given of the naked-eye appearances of the diseased parts, but as to how or why these changes were brought about hardly any reference was made. Indeed, very little was known, and when an explanation was attempted it was generally of a mechanical or physical character. At the present time while, of course, the changes which take place in disease must be known, the study of pathology is especially directed to the discovery of the mode in which these changes occur and the reasons why they appear. To-day it is the etiological side of pathology, so to speak, which occupies our attention, and deservedly so, for, so far as practical results in the treatment of disease are concerned, the knowledge of the changes produced is of comparatively minor importance as compared with that of the reason why they are set up and how they take place. The more accurately we can trace the etiological factors in disease and the subsequent course of events, the more likely are we to arrive at a rational method of treatment.

The most striking and important advance has been the growth of the great science of bacteriology, a science which has not only led to most important practical results, but has also thrown a flood of light on the processes which go on in the body as a whole, and has stimulated research in other directions not immediately associated with it. Twenty-five years ago bacteriology as a science was non-existent. So far as I remember bacteria were not even alluded to in our course of pathology, and it was only from Lord Lister that we heard the rea-

facts so far as they were known, or gained any idea of the importance of their study; but even at that time, although his methods of treatment were already yielding brilliant results and saving many lives, and although he had deduced from clinical facts many points in the life-history of bacteria and their relations to the living body, which were only confirmed by experiment subsequently, still the number of actual proved facts was extremely few.

It is difficult for those who have only taken up the subject of bacteriology comparatively recently to realise the absolute blank which it presented even twenty years ago. When I became house-surgeon to Lord Lister in 1886 objections of all kinds were urged against the theory on which Listerism was based, some denying the existence of bacteria at all, others maintaining the theory of spontaneous generation; some asserting that organisms were always present in the healthy tissues, others denying that they had anything to do with disease, or that the success of the antiseptic principle depended in any way on the exclusion of micro-organisms from wounds. Although at the present time such an investigation would be one of the simplest, yet when I came to carry it out I was met with the greatest difficulties. Practically nothing of the kind had been done before, and all the means of investigation had to be devised. Methods of staining bacteria had not been introduced, we had no oil immersion lenses, and I very soon found that by looking at discharges from wounds containing leucocytes, granular matter, and *debris* with dry or water immersion lenses, and without substage condensors, no satisfactory result could be arrived at. Hence I came to the conclusion that attempts must be made to see whether organisms grew in suitable fluids inoculated from the discharges. Here again everything had to be devised. A suitable pabulum, methods of sterilisation, of inoculation, and of incubation had to be worked out. A large amount of time was spent in getting over the preliminary difficulties, and after a satisfactory method had been found, much labour had to be devoted to preliminary questions, such as spontaneous generation, morphological characters of bacteria, their presence or absence in the living body, conditions of growth, and so on.

A great advance which followed soon afterwards was the remarkable research of Lord Lister, on the bacterium lactis, in which he devised a method of separating bacteria by fractional cultivation, which resulted in the separation of the bacterium which causes lactic fermentation from other organisms. By this research, apart from the method, a great step was gained in the proof of the specificity of a particular bacterium, both as regards morphological characters and chemical action.

Then came Koch's work on infective diseases of wounds, and the publication of his methods of staining and examining bacteria and of cultivating them on solid media, and this work is at the foundation of all modern bacteriological research. From this period the investigations have branched off in two directions. In the first place, almost all the infective diseases have been investigated for parasitic organisms. And, in the second place, researches have been carried on in the direction of tracing out the life history and functional activity of bacteria, and of ascertaining what occurs in the body when organisms or their products are introduced.

From the latter point of view we come to another great landmark in the study of bacteriology, namely, Metchnikoff's work on phagocytosis, a theory which is not only very fascinating in itself, but which has proved a most suggestive working hypothesis leading to many of the researches which have given bacteriology its present position. What a remarkable series of views have been opened up in this direction; questions of the relation of the cells of the body to the parasite, the differentiation of cells, alterations in serum, chemiotaxis, the development of the protective agencies and of antibacteric substances, antitoxins, immunity, and so forth. And yet we are clearly only on the threshold, the very simplicity of many of the explanations is, to my mind, sufficient to show that they are incomplete, for the workings of the living body are far too intricate to be summed up in a simple formula.

In spite, however, of all that has been done, many problems still remain unsolved. In the case of tuberculosis, why is it that in one part of the body we have a slow growing lupus disease, and in another part, perhaps, of the same body, a rapidly developing tuberculosis? None of the explanations usually given, such as differences in the structure or resisting power of the tissues affected or of the individual differences in the virulence or activity of the organism, etc., seem to furnish sufficient explanation. And the same problem is apparently presented with regard to the bacilli of diphtheria, in that we may have in one case a true diphtheria, in another a membranous rhinitis, while in a third, although the bacilli are present in the throat, the individual may be apparently healthy.

Another very remarkable problem is presented by the results which follow free incisions into the tuberculous tissue. An incision is made into the abdominal cavity, masses of tuberculous tissue and tubercle are found scattered over the peritoneum, nothing whatever is done, the wound is stitched up, and yet in many cases the patient, who up to that time has been going steadily down hill, begins to pick up, and

the disease may come entirely to a standstill. This phenomenon is not limited to peritoneal tuberculosis. When I was a student the tuberculous nature of what are now recognised as tuberculous diseases of bones and joints was then only suspected, and was not generally accepted by the medical profession. At that time Lord Lister, under the impression that these diseases were of a simple inflammatory nature, and having observed the improvement which often followed free incisions into chronically inflamed tissues, began as an ordinary line of practice to make free incisions through the thickened synovial membrane of tuberculous joints with the view of relieving tension, which he looked on as the chief cause of the continuance of the trouble. Nothing else was done, the wound was not even washed out, nothing was taken away, and yet in a considerable number of cases so treated improvement began from the time that the incisions were made, the patients lost their pain, the wounds gradually healed up and the disease subsided. Even in cases in which the results were not so satisfactory it could as a rule be noted that although the swelling continued in other parts of the joint, and although the disease began again after a few weeks as vigorously as before, yet for a time at least the thickening disappeared in the neighbourhood of the scars, showing that there at any rate temporary benefit had occurred. What possible explanation can we give of such a result? The older surgeons used to speak of "setting up a healthy action in the part," and were quite satisfied with that statement. Such a view is too vague for us nowadays, but may there not be here a possible working hypothesis which if followed out might throw light on this matter? May not the occurrence of healing processes at one part influence in some way or other morbid process in the vicinity?

Again, what is the meaning of a chronic abscess? How is it that the tubercle bacilli at one time produces a quantity of tuberculous tissue, at another a cheesy mass, and at another a chronic abscess? I do not for one moment accept the view that we have in the latter case to do with a mixed infection, and that the pyogenic organisms have died out before the abscess was opened.

In connection with the pyogenic organisms also we have many problems. How is it, for example, that after an abscess is opened antiseptically suppuration at once ceases? If instead of opening the abscess antiseptically a poultice be applied, suppuration goes on and may be very profuse. But if it be opened at a time when there is free fluctuation and when it is beginning to point, and if the necessary antiseptic precautions be taken and proper drainage provided, no more pus forms, and yet when the abscess is opened it is found to

contain living pyogenic organisms. We can easily understand that the subsidence of the fever and general disturbance is due to diminished absorption of toxic products. But why do not these living pyogenic organisms keep up the suppuration? and why is it that after two or three days one may fail to obtain any cultivations from the serum which escapes from the wound? If the inflamed part be opened up antiseptically, however, at an early period, just when pus is beginning to form, there is not always the same complete absence of suppuration, although it seldom goes on to any considerable extent. Again, an operation wound becomes septic and one naturally opens it up freely and establishes drainage; but here suppuration does not cease at once in the same typical manner as in the case of an abscess which has existed for some days. The old surgeons used to speak of an abscess being "ripe," and they allowed it to remain unopened for some days till it was pointing. They found that if they opened a deep abscess early, suppuration went on and was apt to extend. No doubt a variety of causes led to this dictum: they did not provide proper drainage; they introduced other and more vigorous organisms at the time of operation and afterwards, etc.; but do not the facts seem to indicate that, as regards the cessation of suppuration, there is some ground for this idea of ripeness. It is possible that when the abscess has attained a considerable size and the tension of the pus in it is great, the sudden release of the pent up fluid may lead to such a pouring out of serum containing antitoxic substances as to absolutely destroy the organisms present, while, the case being treated antiseptically, no fresh organisms can come in to take their place? And yet I can hardly think that that is the whole explanation.

Although it is in the department of bacteriology that the most striking advance has been made, great progress has also gone on in pathology generally, in a considerable number of cases no doubt stimulated by the results of bacteriological research, and more especially by Metchnikoff's work. The subject of inflammation has had much attention paid to it as the result of these studies, although I cannot say that to my mind it has been made any clearer. The tendency now appears to be to regard inflammation as the natural effort at repair after injury. At one time this was the view held by surgeons, and the doctrine was that inflammation was essential to healing, and in the description of healing by first intention it was stated that a red blush occurred around the wound, not so severe, however, as where suppuration takes place, and that without this red blush the edges did not adhere. When antiseptic treatment was introduced it became evident that no inflammatory blush or other sign of inflamma-

tion was necessary for healing by first intention; in fact, it was found that wounds healed best when no visible sign of inflammation was present. I have, therefore, always taught that inflammation and healing are two different and, indeed, to some extent, antagonistic processes, and that although in every wound the tissues in resenting the injury show the early stage of inflammation, yet if no organisms be admitted the inflammatory phenomena soon pass off, and where there is destruction of tissue a second process, namely, that of repair, begins. As I have said, in recent writings the tendency appears to be to look on inflammation and healing as parts of the same process; but, in spite of the very able arguments adduced in favour of this view, I am still unconvinced. I still look on inflammation as the mechanism which gets rid of noxious agents or neutralises their effects, and on the healing process as that which repairs defects, whether they are caused by injury and associated with inflammation or not. In fact inflammation must be followed by repair if recovery is to take place, but repair need not be preceded by inflammation. The difficulty arises from the close association of the two processes, both of which have to do with the growth of cells, and from the fact that repair follows as soon as the inflammation begins to subside. Hence under the microscope, except in cases of acute suppurative inflammation, one sees the two processes at work side by side, and it is not a matter of surprise that they should be confounded. As a matter of fact, the more the cellular processes are investigated the more it becomes evident that there is a marked differentiation of cells as regards function.

When Cohnheim first published his observations on the emigration of corpuscles, it was thought by many that the leucocyte was everything and did everything, but it was soon evident that other cells of different origin must be taken into consideration. When Metchnikoff's theory of phagocytosis first came out, some of those who adopted it assumed that all wandering cells were phagocytes; but here, again, further investigation has shown that cells differ greatly as regards their phagocytic action. I think that a good deal of the confusion of these processes arises from the fact that expressions involving a teleological argument are very common, more especially with regard to the protective arrangements of the body. On the idea of an acting intelligence on the part of the cells, the two processes would naturally go together; but, looked on as the simple effect of an injury, they should, I believe, be regarded as independent, and the less and the shorter the inflammation the better and quicker the healing process.

A very remarkable thing in connection with these advances, espec-

ially in experimental pathology, is the enormous direct practical benefit which has already resulted to the human race; and it is sufficient answer to the antivivisectionists who oppose the use of intelligence and observation and experiment, to point to the saving of human life and the relief of suffering which has taken place in the last few years. Since Pasteur's experiments on spontaneous generation were published, only thirty-six years have elapsed, and during that time remarkable results have been attained in treatment as the result of experimental pathology.

Scientific efforts to arrive at the truth as regards the workings of Nature are necessarily slow, and must be carried on without any regard to possible ultimate practical results. When the earlier investigators studied the phenomena of electrical action, I doubt if it ever occurred to them that the result of their study would be of any practical value, certainly they could have had no idea of the revolution which the study of electricity would effect in the history of the world. When Pasteur resolved to test the theory of spontaneous generation it did not seem likely to lead to any beneficial result; indeed, his friends tried to dissuade him from entering into what was apparently a useless investigation, and yet what numbers of human lives have been saved as the result of that work, and what incalculable benefit has accrued. It is greatly the fashion with the opponents of experimental research to demand a single instance in which an experiment has led to the discovery of a means of cure; but in no department of science has a single experiment of itself alone led to the practical result, the final observation which led to the practical result has been built up on numerous and laborious preliminary investigations and observations. And similarly, in regard to the cure or prevention of disease, the final trials on man have been led up to by numerous preceding observations and experiments. If these deluded people had their way, the result would be that experiments would be limited to man, and everyone to whom a new idea occurred would apply it without any previous investigation—surely an appalling prospect, whether for physician or patient.

The practical results already obtained affect diagnosis, prophylaxis, and treatment. The diagnosis of many parasitic diseases has now been rendered certain and easy by searching for the causal organism, and I need only instance such diseases as diphtheria, tuberculosis, malaria, anthrax, gonorrhœa, etc. And it is not only by the discovery of the parasite that diagnosis is assisted, but also by other effects of the organism such as the sort of changes set up in the tissue, the reaction to products of the organism, for instance, tuberculin and mallein,

etc., and we shall hear a good deal about one of these diagnostic advances in the course of the meeting, namely, the action of the serum of typhoid patients on motile typhoid bacilli. If no other practical advance had resulted from bacteriological work, the possibility of establishing a definite diagnosis in obscure cases is surely a gain of the utmost importance, for it enables a rational prophylaxis and treatment to be instituted.

The greatest of all the advances, because so wide reaching, has been in the prophylaxis of disease, especially in the prevention of septic disease after operation, as brought about by the discoveries of Lord Lister. By these discoveries the occurrence of sepsis in wounds made through unbroken skin is prevented, and the chances of general sepsis in septic wounds are much diminished, and numerous lives are saved, not only in this way, but also by the fact that the Listerian treatment permits the performance of live-saving operations which could not otherwise be attempted. In other cases, also, prophylaxis is of great value, as in diphtheria, and in Pasteur's treatment of rabies, which may properly be grouped as a prophylactic rather than a curative treatment.

Lastly, I may refer to advances in the cure of disease. In the case of diphtheria there can be no question that the antitoxin is a most potent curative agent, and that, used in the early stages, it is almost certain to cut short the disease. As regards tetanus, the evidence in the case of animals is absolutely convincing, but in patients suffering from the disease the effect is not certain, probably because we have to do with an acute illness, which runs its course before the serum has had time to act. The same may also be the case with the antistreptococcic serum, although I have great doubts of its value as a curative agent. In other instances, such as plague and snakebite, we may apparently look forward to a cure; while researches are being carried on with regard to pneumonia which may lead to valuable results; nor must I forget to mention Pasteur's system of inoculating cattle against anthrax. What are we to say about the new tuberculin? We all know how careful an observer Koch is, and the fact that he looks on it as a valuable remedy is to my mind sufficient to make it necessary to give it a careful and hopeful trial. I must say that I have always been favourably inclined to the old tuberculin, and have regarded it in relation to phthisis like iodide of potassium in relation to syphilis, and, had I been a physician, I do not think I should have abandoned it in the hurried manner in which it was thrown aside.

But it is not only in the direction of bacteriology that advantage has resulted from pathological research. Look at the advances in

treatment from the use of organic fluids. As the result of observations on man and researches on animals as to the effects of excision of the thyroid gland attempts were made to transplant the healthy thyroid gland into animals and patients in whom it was absent, and following these attempts the use of thyroid extract has ultimately come to be a recognised method of treatment. There is, perhaps, nothing more striking in medical treatment than the rapid and remarkable improvement in cases of myxœdema from the use of thyroid extract.

I might enumerate many other instances of direct benefit from pathological research, such as the advances in the treatment of tuberculous diseases of bones and joints as the result of better knowledge of the nature and distribution of the disease, the treatment of appendicitis, and the investigations on peritonitis and diseases of the appendix, the more complete operations for cancer following fuller study of the mode of spread of the disease, and so on; but I have said enough to show the great importance and value of pathological research. Such results must encourage us to go on working with all our might and without ceasing, bearing in mind that many are suffering and dying every day who might be saved if only we had just a little more knowledge of the workings of the body and the processes of disease.

But while pathologists are thus working out problems which affect the general well-being of mankind, and the solution of which can be of no personal gain to themselves, is it too much to ask mankind to furnish the means for such research? The English are looked on as a thoroughly practical people, and yet it is a very remarkable thing that England is almost the only country which does not realise the importance of scientific research, and the result is that in England, with very few exceptions, men who might otherwise have thrown much light on these matters are compelled to turn their attention to practice in order to make a living. Unless work of this kind is done how can we hope to advance with any rapidity in the treatment and cure of disease; the surgeon or physician must wait till the information of which he is urgently in need has been acquired for him by the pathologist. Such apathy can surely only be the result of ignorance. A rich man affected with an obscure or incurable malady cannot understand how it is that he fails to obtain the definite opinion or the relief which he so earnestly desires, and for which he is prepared to pay any price. Surely if he understood the meaning and importance of pathological research, and that the practising physician can only apply and carry out what is taught by the pathologist, he would bestir himself to aid research in order to gather information which might be of much use to him and to others.

THE SECTION OF PSYCHOLOGY.

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Mental Evolution in Man—About sixty years ago now, in the time of the Millerite excitement, a man who believed that the world was about to end expressed his fears to Emerson, who replied that it was really a matter of little consequence, "for," said he, "we can do very well without it." There are wise men who teach that each man creates the world he lives in, and as he gives in its substance so also does he give in it its quality, insomuch that it is good or bad as he is good or bad. Be this as it may, it is certain that each one of us is of more consequence to himself than is all the outside world, be it shadowy or be it solid; be it created by each inhabitant or be it independent and self-existent. Not only so, but the essential part of each man is what we call his mind, in comparison to which the body is an insignificant factor.

The Study of Psychology.—This being granted, it would seem to follow that psychology ought to be the most interesting of all the sciences, and as a matter of fact, it undoubtedly is so, though it has been greatly discredited by the imperfection of the method by which it has until very lately been studied. That imperfection is so great that it would hardly be an exaggeration to assert that nearly all the study and thought expended upon it down to the beginning of our own age has been fruitless and as good as wasted, except inasmuch as it has at last made clear the impossibility of the route men have sought to follow, the route, namely, of introspection. For we might as well study the human body alone without reference to that of any other creature, and attempt in that way to decipher its genesis, development, and meaning as to attempt to comprehend a single human mind without including in our examination not only other human minds in all stages of evolution, but equally all other minds to which our own is related—that is to say, all minds other than human belonging to our kinsfolk the animals, minds which stand to-day like mile posts along the almost infinite length of the path which our mind has followed in its upward march across the immensities and eternities from its remote infancy to the present hour; minds in which a thousand faculties represent to us everywhere, in infinite sameness and variety, replicas of our own or of parts of our

own, showing us, as the poet says, tokens of ourselves which we "negligently dropped as passed that way huge times ago."

Comparative Psychology.—As man's bodily life rests upon and grows from that of countless prehuman ancestors; as man includes in his structure the heart of the reptile, the gills of the fish, as well as the forms in outline of innumerable still lower races, so is his so-called human mind rooted in the senses and instincts of all his ancestral species; and not only so, but these senses and instincts still live in him, making up, indeed, far the larger part of his current every-day life; while his higher psychical life is merely the outgrowth and flower of them.

As truly as the plant is an embodiment of inorganic matter vivified by the transmuted forces, which in the non-vital world about us we call light and heat, so truly is man's mind made the outcome of—the expansion and culmination of—the imperfect sensation of the worm, the rudimentary sight, hearing, and taste of the fish and reptile; and the simple consciousness which, springing from these, passed to us after almost infinite ages of slow evolution and amelioration through tens of thousands of generations of placental mammals our immediate progenitors.

In the growth of mind, whether that of the race or of an individual, we recognise two distinct processes: First, the very gradual evolution to, or toward, perfection of faculties that have already come into existence; and, secondly, the springing into existence (as new branches start from a growing tree) of faculties which had previously no existence. For it is clear to the least thoughtful student that no faculty (as no organ) came into mature and perfect life at once. Hearing and sight, we are told, developed by slow degrees from the sense of touch; and in the region of the intellect conceptual life was born from ages of receptual, and that from millenniums of perceptual.

Mental Growth in the Individual and in the Race.—Let us now suppose mind growing for millions of years in the way set forth. It begins, we will say, as mere excitability; to that after a long time is added what may be called discrimination, or choice and rejection of, for instance, different kinds of food. After another long interval of almost infinitely slow advance sensation appears, and with it the capacity of pleasure and of pain; then, still later, memory; by and by recognition of offspring; and successively thereafter arise reason, recognition of individuals, and communication of ideas. Concurrently with these intellectual faculties, certain moral functions, such as fear, surprise, jealousy, anger, affection, play, sympathy, emulation, pride, resentment, grief, hate, revenge, shame, remorse, and a sense of the

ludicrous have also arisen in the nascent mind. We have reached now the mental plane of the higher animals, which is equally that of the human being at about two years of age. Then occurs in the child the mental expansion which separates man from the higher mammals—for something like a year the child mind steadily grows from the status of the latter to the status of the human mind. This year in the individual, during which it walks erect but possesses a receptual intelligence only, not having yet the power of forming either concepts or true words, represents in the race the age of *alalus homo*, the period of perhaps a hundred thousand years, during which our ancestors walked erect, but not having self-consciousness had no true language. At the average age of three years in the individual self-consciousness is born, and the infant, from the point of view of psychology, has become a human being. But we all know that after the attainment of the distinctively human faculty, self-consciousness, the child has still much to acquire both in the way of expansion of already possessed faculties, and in the acquisition of new ones before it is mentally a mature man. Of the numerous faculties it still has to acquire I shall only mention here the colour sense, the sense of fragrance, the human moral nature, and the musical sense. A consideration of these four and of self-consciousness will occupy the short time allotted me to day.

And first a word as to the basic and master human faculty self-consciousness. It occurs, as said, at about the average age of 3 years; but when it first made its appearance in the race it must have done so at full maturity; perhaps at the age of 20, both life and childhood being shorter at that time than they are to-day. You will see at once why I say self-consciousness must have occurred at first at maturity. Its acquisition at a given epoch supposed a higher mental life than had hitherto existed—such higher life on the part of the race could not have come to the individual before his maturity. To suppose that would be (if you will think of it) a contradiction in terms. The human mind attains its high mark at maturity (that is what the word means), and one generation could not reach before maturity what the preceding had not reached at all. Well, but self-consciousness occurs to-day at 3 years of age, and we only reach full mental maturity (on the average) at the age of 35. The advance then made by the individual from the age of 3 to that of 35 represents the advance of the race between the date of the appearance of self-consciousness and to-day, the mental status of the 3-year-old child to-day being the mental status of the adult when self-consciousness first appeared. How long has it taken the human mind to grow from mere self-consciousness to its present stature? Not less certainly than several hundred thou-

sand years. Whatever the time required is the time during which man has inhabited the earth.

Of all the mental faculties below self-consciousness each one has its own time for appearing in the human infant—as, for instance, memory and simple consciousness appear within a few days after birth, curiosity ten weeks after, use of tools twelve months after, shame, remorse, and a sense of the ludicrous—all of them 15 months after birth. Now, it is to be noted that in every instance the time of the appearance of a faculty in the infant corresponds with the stage at which the same faculty appears (as far as can be at present ascertained) in the ascending animal scale; for instance, memory and simple consciousness occur in animals as primitive as the echinodermata, while the use of tools is not met with below monkeys, and shame, remorse, and a sense of the ludicrous are almost, if not entirely, confined (among animals) to the anthropoid ape and the dog.

To turn now to the true subject of this paper I want to say in the first place that as in prehuman so in human psychology each superadded faculty was acquired in the history of the race, and that that historic period corresponds with the time in the life of the individual into whom the faculty is born to-day. For instance, self-consciousness appears in the individual at the age of about 3 years—it appeared in the race several hundred thousand years ago. It has been proved by Geiger and others that our color sense has been acquired by the race not more than about thirty thousand years ago. Well, it is acquired by the individual at the age of about 5 or 6. It is thought that the sense of fragrance was acquired by the race later than the colour sense; it is also acquired later by the individual. Some considerable study of history has led me to the conclusion that our human moral nature cannot be more than ten thousand years old. For a careful consideration of the records that have come down to us from the early Romans, Hellenes, Hebrews, Egyptians, Assyrians and Babylonians would indicate, I think unmistakably that, as we go back into the past, this faculty tapers down towards the vanishing point, and that if it continues so to taper as we ascend the ages all of what we distinctively call our human moral nature would certainly have disappeared by the time we had gone back the number of centuries mentioned—that is ten thousand years.

Well, to-day the human moral nature in the individual, instead of being born at the age of 3 years as is self-consciousness, or at 5 or 6 as is the colour sense, does not come into existence before the average age of about 15 years. As to the musical sense, it is almost certainly less than five thousand years old in the race,

and, when it occurs at all, is not usually born in the individual before adolescence.

There are three other laws, each well worthy of notice, which govern the acquisition of new faculties by any given race. They are as follows :

1. The longer a race has been in possession of a given faculty the more universal will that faculty be in the race. This proposition scarcely needs proof—every new faculty must occur first of all in one individual, and as other individuals attain to the status of that one they too will acquire it, until after perhaps many thousands of years the whole race having attained to that status the faculty shall become universal.

2. The longer a race has been in possession of a given faculty the more firmly is that faculty fixed in each individual of the race who possesses it. In other words : The more recent is any given faculty the more easily is it lost. High authority, such as that of Charles Darwin, could be quoted in support of this proposition ; it is almost, if not quite, a self-evident proposition.

3. A study of dreaming seems to reveal the fact that in sleep such mind as we have differs from our waking mind, especially by being more primitive ; that in fact it would be almost strictly true to say that in dreams we pass backward into a pre-human mental life ; that the intellectual faculties which we possess in dreams are, especially, recepts, as distinguished from our waking concepts ; while in the moral realm they are those facilities, such as remorse, shame, surprise, along with the older and moral basic sense functions, which belonged to us before we reached the human plane, and that the more modern and mental faculties such as colour, sense, musical sense, self-consciousness, the human moral nature, have no existence in this condition, or if any of them do occur it is only as a rare exception.

Let us now compare, one with the other, a few of the faculties which have been already mentioned in the light of the rules laid down. To do this, will give us, more clearly than perhaps anything else could, a definite notion of the growth of mind by the successive addition of new functions. For this purpose we will take simple consciousness, colour sense, the human moral nature, and the musical sense.

Simple Consciousness.—Simple consciousness makes its appearance in the human infant at the age of a few days ; it is absolutely universal in the human race ; it dates back certainly to the earliest mammals, and probably much earlier ; it is only lost in deep sleep and coma ; it is present in all dreams.

Shame.—Shame is said to be born in the human infant at the age of 15 months ; it is a pre-human faculty, being found in the dog and in apes, and undoubtedly existed in our pre-human ancestry ; it is almost universal in the race, being only absent in the lowest idiots : it is very common in dreams.

Self-Consciousness.—Self-consciousness makes its appearance in the child at the average age of 3 years ; it is not present in any species, but the human ; it is, in fact, that faculty the possession of which by an individual constitutes him a man. It is not universal in our race, being absent in all true idiots : that is, it is permanently absent in about one in each thousand human beings born into the world. In our ancestry it dates baek to the first true man ; a race, we are told, unclothed, walking erect, gregarious, without a true language, to a limited extent tool-using, destitute of marriage, government, or of any institution, animal, but in virtue of its highly developed receptual intelligence, king of animals, which developed self-consciousness, and by that fact become men. It is impossible to say how long ago it was when this event occurred, but it could not have been less than several hundred thousand years. This faculty is lost much more easily and frequently than is simple consciousness. We lose it in coma and also often in the delirium of fever ; in certain forms of insanity, as in mania, it is often lost for weeks, even months at a time : and lastly, it is never present in dreams.

Colour Sense.—I have elsewhere written at large on the colour sense, and have only space here to give the facts which bear on the present inquiry. That these are facts, the argument referred to, I think, demonstrates. This faculty appears in the individual at the average age of about 5 years. It is absent in one adult human being out of every forty-seven ; it appeared in our ancestors, as Geiger has shown from linguistic paleonotology, in the Aryan period, probably less than 30,000 years ago. It is seldom present in dreams, and when it does occur, that is when any colour is seen in a dream, it is generally that colour which for good reasons was first perceived by man, namely, red.

The following occurrence illustrates (I think in a striking manner) the usual absence of the colour sense during the partial consciousness which occurs in sleep. A man whose hair is white dreamed that he was looking in a glass and saw that his hair was not only much thicker than he knew it to be in fact, but instead of being white, as he also knew it to be, it was black. Now, he well remembered in his dream that his hair had never been black. It had, in fact, been a light brown. He wondered (it is worth mentioning here that wonder

or surprise is a pre-human faculty, and is common in dreams) in his dream that his hair should be black, remembering distinctly that it had never been so. (I may say here that memory is a pre-human faculty, and is common in dreams). The important thing to note about the dream under consideration is that, though it was clear to the dreamer's mind that his hair had never been black, yet he did not remember that it had been brown. For some reason (and I think the reason is quite clear) there was a difficulty in calling up before consciousness any colour.

Moral Nature.—The human moral nature belongs to a much later stage of evolution than any of the faculties so far considered. It does not make its appearance in the individual before the average age of 15 years. It is congenitally and permanently absent in at least forty human beings out of every thousand. It would seem clear, as stated already, from a consideration of our historic ancestors, from the fact that this faculty rapidly fades out as we ascend into the past, that it cannot have existed in the race more than 10,000 years at the most. It is far more unstable in the individual than the older faculties such as self-consciousness. It is never present in dreams.

Musical Sense.—Finally, the musical sense (a faculty which is now in act of being born into the race) does not appear in the individual before the average age of about 20 years. It does not exist in more than half the members of the race. It has existed less (perhaps considerably less) than 5,000 years in the race. It is never, or almost never, present in dreams, even in the case of professional musicians.

The Scheme of Mental Evolution.—You see now clearly the scheme upon which I suppose the mind (as far as we have got) to have been built. I say advisedly "as far as we have got," because, if the mind has grown in the way set forth, it is still growing and is not built, but is in the act of building. No man can ever say positively that his theory (of any fact) is the true one, but I am prepared to say of the above hypothesis that, if it be accepted, it will enable us to understand something of the phenomena of mind as we observe it, whereas if we should prefer to hold, as many do, that the human mind was created independently of any that preceded it by a fiat and *per saltum*, then I say deliberately that there is and can be no such thing as a science of psychology, and that every attempt to investigate or explain, to comprehend or divine the rationale of the facts observed as to its origin and growth in the individual must remain for ever futile. And if I could find the right words I would bring home to each one who hears me the inextinguishable conviction that, in this idea of evolution lies enfolded the mystery of the past, the explana-

tion of the present, and the sure prescience of the future—what we were, what we are, and what we shall be.

The Atavistic Theory of Idiocy and Insanity.—In conclusion, I desire to refer briefly to two corollaries which flow from this hypothesis. The first is, that if it is correct, then all forms of insanity, including all forms of idiocy, are nothing more nor less than cases of atavism. In this view insanity is due to congenital absence or imperfection (leading to breakdown) of some faculty or faculties, such absence or imperfection being due to more or less complete reversion to an ancestral type. In my opinion this view explains insanity and its numerous forms more completely than these can be explained from any other point of view, and is therefore of great value to the thoughtful student of these phenomena. Upon this view, the comparatively recent origin and rapid evolution of the human mind, and especially the rapid mental evolution of the so-called Aryan peoples in the last four or five thousand years, is almost solely responsible for the large number of cases of insanity in the modern civilized world, since the stability of any form, function, or faculty in any race is dependent upon the time it has existed in that race, and therefore the more recent a faculty is in a race the more frequently will it be found absent, defective, or unstable in the individuals of the race.

Future Development of Mind.—The second corollary, which is even more important than the first, is that, upon the view here set forth, the human mind at present is not formed, but forming, is not completed, but in process of construction. By slow and dubious steps taken in darkness our remote ancestors wearily climbed to simple consciousness. After another immense interval they reached self-consciousness. But that cannot be the end—the cosmic process cannot stop there—cannot indeed stop anywhere. Evolution, as far as we can see, has always gone on, is going on to-day, and will always go on. Our old mental faculties are some of them fading out, others advancing toward greater perfection, and alongside of them new ones are springing up, some of which will, without doubt, be of overshadowing importance in the future.

So-called telepathy and clairvoyance seem to be specimens of such nascent faculties. I place in the same class the phenomena of what is often named spiritualism. The labours of the Society for Psychical Research have made it to me plain that these phenomena as notably in the case of W. Stainton Moses, really exist. And I think that a study of the above-mentioned case, together with that of Mrs. Piper and that of Mary J. Fancher, of Brooklyn, would compel any unprejudiced person to make the same admission. But to me these are not

cases in which outside agents are acting on or through a human being, but are cases in which a given human being has faculties which are not commonly possessed. Whether any given faculty, such as one of those now alluded to, shall grow, become common, and finally universal in the race, or wither and disappear, will depend upon the general laws of natural selection, and upon whether the possession of the nascent faculty is advantageous or not to the individual and to the race.

But of infinitely more importance than telepathy and so-called spiritualism (no matter what explanation we give of these, or what their future is destined to be) is the final fact to be here touched upon. This is that superimposed upon self-consciousness, as is that faculty upon simple consciousness, a third and higher form of consciousness is at present making it appearance in our race. This higher form of consciousness when it appears occurs, as it must, at the full maturity of the individual, at about the age of 35, but almost always between the ages of 30 and 40. There have been occasional cases of it for the last 2,000 years, and it is becoming more and more common. In fact in all respects, as far as observed, it obeys the laws to which every nascent faculty is subject. Many more or less perfect examples of this new faculty exist in the world to-day, and it has been my privilege to know personally, and to have had the opportunity of studying, several men and women who have possessed it. In the course of a few more milleniums there should be born from the present human race a higher type of man possessing this higher consciousness. This new race, as it may well be called, would occupy, as toward us, a position such as that occupied by us toward the simple conscious *alalus homo*. The advent of this higher, better, and happier race would amply justify the long agony of its birth through the countless ages of our past. And it is the first article of my belief, some of the grounds of which I have endeavoured to lay before you, that a race is in course of evolution.

THE SECTION OF DERMATOLOGY.

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The Rise and Progress of Dermatology.—The present is a time of jubilees and centenaries—occasions which we, in common with toilers in other fields, celebrate by reviewing the progress that has been made, and giving thanks to God that we are not as our predecessors were a hundred or even fifty years ago. The custom might at first sight seem to have a tendency to engender a feeling of Pharisaic self-complacency. In reality, however, such retrospects have a chastening effect, as showing that, if we have any reason to look upon ourselves as just in a scientific sense, that is largely the result not of our own merits but of those of the men who prepared the way for us. They have the still greater advantage of enabling us to see exactly where we stand in knowledge of the things which form the object of our study by showing us what has been done and what yet remains to do. As embryology furnishes the key to the riddles of anatomy, so the history of the evolution of any branch of science throws light on many points that would otherwise be dark, explains the origin of terms and theories, rescues from oblivion truths overlooked or forgotten, and, showing the pitfalls which hindered those who have gone before, teaches us to walk more warily.

It is remarkable that in the journalistic pæans in which the triumphs of medicine in the glorious reign of Queen Victoria have lately been recounted, dermatology has had no part. Why should this branch of our art be thus unhonoured and unsung? It is a form of specialism, no doubt; but specialism is no longer looked upon as an unclean thing—except by some survivor of an antique world here and there. Dermatology, although its victories have perhaps been less showy than those won in some other special departments, has not lagged behind in the onward march of medicine. It has therefore seemed to me that I might on the present occasion fitly endeavour to supply the missing cord in the great *Jubilate* whose echoes are still ringing in our ears. A review of the progress that has been made in the knowledge of skin diseases is all the more appropriate at the present time, since what I take leave to call the centenary of the birth of scientific dermatology is not long past. In 1790 the Medical Society of London awarded the Fothergillian gold medal to Robert Willan, who had some time before submitted to it the outline of his plan for

the arrangement and description of cutaneous diseases.[1] Willan may justly be called the creator of dermatology. Before him the skin was looked upon more as a mirror on whose face internal disease "glassed itself in tempest" than as an important organ subject to manifold disorders peculiar to itself. A review of the development of this branch of medicine during the past hundred years is therefore virtually a history of it from its beginning. This, of course, cannot be told in detail here, although a full record of the work of the makers of dermatology would certainly not be lacking either in interest or in usefulness. All that can be attempted in the time at my disposal is a rapid sketch of the principal changes in the conceptions of skin diseases and in the manner of treating them that have taken place since Willan reclaimed this waste land of pathology and brought it under scientific cultivation.

Forerunners of Willan—Willan was not the first who wrote on skin disease. As our terminology bears witness, the Greeks gave a good deal of attention to the subject. Hippocrates speaks of "pityriasis," "lichen." "herpes," "pomphi," and many other forms of cutaneous lesion, and roughly classifies them. Later Celsus, Galen, Paul of Ægina, and after them the Arabians, described various affections of the integument. The mediæval writers might have said with Browning's Karshish,

> Scalp disease
> Confounds me, crossing so with leprosy.

Much of the skin disease they saw was leprosy, and they doubtless often imagined it where it did not exist. At a later period syphilis overshadowed everything.

The first treatise professedly devoted to diseases of the skin was that of Hieronymus Mercusialis of Venice, which was published in 1572 under the title *De Morbis Cutaneis et de Omnibus Corporis Excrementis;* the author had, however, nothing to teach beyond what he found in the ancient writers. In the early part of the eighteenth century Daniel Turner produced *A Treatise of Diseases Incident to the Skin*, which appeared with the *imprimatur* of the President and Censors of the Royal College of Physicians of London, to whom it was offered in an "Epistle Dedicatory" in 1712. Turner's work, though it is described by Kaposi as "very important," is almost wholly a compilation from other writers, and treats not of the skin alone, but of all "distempers" affecting "the outward Parts or Confines, as may be said of the Human Body." Thus, not only the eruptive fevers, the "green sickness" and the "yellow jaundice," but phimosis, and paraphimosis, hæmorrhoids, "chaps on the fundament,"

imperforate conditions of the natural passages of the body, ulcerations of all kinds, burns, stings and bites of venomous creatures, hydrophobia and poisonous wounds, are looked upon by the author as falling within his province.

Later in the same century there appeared almost simultaneously two works, each of which in its own way marked a distinct advance towards a scientific dermatology. In a book entitled *Doctrina de Morbis Cutaneis*, which was published at Vienna in 1776, Joseph Jacob von Plenck for the first time attempted a complete classification of diseases of the skin. He arranged them, according to what appeared to him to be the most charactertistic objective feature, in 14 groups with 120 varieties. In his *Tractatus de Morbis Cutaneis*, published in Paris in 1777, Lorry, besides giving good descriptions of clinical phenomena, discussed the pathology of cutaneous affections in the light of the knowledge of the structure of the skin and the morbid processes of which it might be the seat that existed in his day.

But these were voices of men crying in the wilderness, and neither Plenck or Lorry,—meritorious as were the works of both—did much to dissipate the darkness that was upon the face of this branch of medicine. At the beginning of the nineteenth century it could be said with perfect truth that little improvement had been made in the subject at large since the days of Avicenna.[2]

The Birth of Dermatology—In 1808 they appeared the first volume of Willan's treatise *On Cutaneous Diseases*, a great work which its author did not live to complete. Ten years before he had given to the world a slender volume dealing with a particular class of lesions of the skin.[3] Willan set himself the task of reducing the chaos of skin diseases to something like a cosmos. The following are, in his own words, the object at which he aimed in the execution of this design;

1. To fix the sense of the terms employed by proper definitions.

2. To constitute general divisions or orders of the diseases from leading and peculiar circumstances in their appearance; to arrange them into distinct genera; and to describe at large their specific forms or varieties.

3. To classify and give names to such as have not been hitherto sufficiently distinguished.

4. To specify the mode of treatment for each disease.

Like Plenck, Willan grouped skin diseases according to the character of the predominant lesion; and indeed there can be little doubt that he took the groundwork of his classification from Plenck.[4] The English dermatologist, however, reduced the fourteen orders of

his Austrian forerunner to seven, "to be characterized by the different appearances of papulæ, scales, rashes, vesicles, pustules, tubercles, and maculæ." To these another order, "bullæ," was afterwards added. This classification is of course very defective, inasmuch as it takes account only of the outward and visible signs and results of disordered action. As the skin has but a limited range of pathological expression, lesions identical in appearance and in structure are produced by widely different causes. Hence a classification based solely on objective appearances inevitably led to the formation of motley groups including conditions having no essential feature in common; wherein, for instance, variola was classed with scabies as being "pustular," and varicella with eczema as "vesicular," diseases. Moreover, as in the evolution of many affections of the skin, the lesions run through almost the whole gamut of differences in appearance which constitute the several "orders," it is unsafe to look only at them in seeking for the distinctive character of such diseases. But Willan's classification, defective as it was at least introduced a definite principle of arrangement into a reign of pathology where before all was "most admired disorder." If he got the idea from Plenck, he must be allowed the credit of having greatly bettered the instruction which he received, and of having presented it to the medical world in such a manner as to impress on the mind of the profession.

It is not, however; Willan's classification that constitutes his chief title to be regarded as the founder of dermatology. His judicious selection and accurate definition of terms; his astonishingly faithful word pictures of the appearances of disease drawn directly from Nature, and made more vivid but scarcely more graphic by the coloured engravings with which he supplemented his descriptions, and his rational methods of treatment, were all his own. It was his teaching that transformed a confused jumble of folklore as to "tetters," wet and dry, and of figments of the medical imagination embodied in words of learned sound but little meaning into a science, rudimentary indeed, but grounded on a solid foundation of observed fact. Willan's work is, therefore, rightly looked upon as the true starting point in the history of dermatology.

The English School—Willan died before he could complete his work; but, fortunately, he left behind a disciple well worthy to wear his mantle. This was Thomas Bateman, who had been in constant intercourse with him for many years, and who was thoroughly acquainted not only with the teaching but with the spirit of his "learned preceptor." Bateman completed Willan's unfinished *Delineations of Cutaneous Diseases*, and published a *Practical Synopsis of*

Cutaneous Diseases, which did far more to make his master's work known than Willan's own unwieldy and incomplete book. It is hardly too much to say that without Bateman Willan might have been forgotten. Bateman, however, was not a mere expositor; he was a man of truly scientific mind, and would doubtless have added largely to knowledge had not he, too, been cut off prematurely.

Bateman's *Synopsis* ran through several editions in his life-time, and afterwards found an editor in Anthony Todd Thomson, who also published an *Atlas of Delineations of Cutaneous Eruptions* illustrative of the descriptions in Bateman's book. Thomson paid special attention to diseases of the skin for more than thirty years. He was an accurate observer, and was very successful in treatment. Towards the end of his life he embodied the fruits of his experience in a *Practical Treatise on Diseases Affecting the Skin*, which, however, he did not live to finish; it was completed by his nephew, Edmund Alexander Parkes, who was familiar with Thomson's opinions and methods of treatment in cutaneous diseases, and published in 1850. Thomson held that there could be "scarcely any difference of opinion respecting the necessity of arranging the tribe of those diseases.... (of the skin) according to the physical characters of the eruptions," and in adopting this method he chose "as the least exceptionable the orders of Willan."[5] But although "forced," as he says, to adopt the arrangement, he was careful to guard himself against the supposition that he regarded "the knowledge of their physical characters as throwing any light upon the nature of the diseases which originate the eruptions."

Thomson was physician to University College Hospital, where he was the first of what may be called a dermatological succession, which, handed on in turn by Parkes, Hillier, and Tilbury Fox, is still worthily continued by Radcliffe Crocker.

Almost simultaneously with the treatise of Thomson and Parkes there appeared a work which is one of the landmarks in the history of the English school of dermatology. This was Erasmus Wilson's *Diseases of the Skin*, the preface to which is dated 1851. Wilson, who had commenced his scientific career as an anatomist, had already done a good deal of work in dermatology, particularly in the microscopic study of the cutaneous tissues. He made a new classification of skin affections, grouping them according to the structure in which the morbid process orginated into four primary divisions: (1) Diseases of therma; (2) diseases of the sudoriparous glands; (3) diseases of the sebiparous glands; (4) diseases of the hairs and hair follicles. Each of them included numerous secondary divisions,

corresponding to the manner in which the structure was changed or the function disordered. Wilson's influence was for a long time predominant among his own countrymen, and by workers in other countries he was looked upon as the foremost representative of British dermatology. He had an eye for form and colour, and often found the right word to express them. His descriptions of diseased conditions are thus almost unrivalled in their picturesque and yet faithful rendering of appearances. He added little, however, to our knowledge of the pathology and therapeutics of skin diseases, and added not a little to the confusion which existed on the subject by his artificial classification and his ever-changing nomenclature.

On the work of the living leader of our British school of dermatology, Mr. Jonathan Hutchinson, it is not fitting to dwell here. It may, however, be permissible to say that he has brought to the study of the pathology of the skin a knowledge of disease in general such as probably no other dermatologist has ever possessed. This, together with a marked originality and independence of mind, and a singular power of seeing points of likeness in things to outward seeming most unlike, has enabled him to throw an unexpected light on many dark places of dermatology.

On the whole it may be said that the charactertistics of the British school of dermatology are those commonly held to be distinctive of the British intellect in whatever sphere it is set to work. We are a practical people, loving facts and caring little for theories. Accordingly British dermatologists from Willan to Hutchinson have been first of all observers. They have striven to get at what Majendie called the *fait brut*, to see things as they really are, and to describe what they saw as faithfully as they could. They have been distrustful of generalisations and cautious—perhaps over cautious—in deductions. But the facts gathered by them have endured while theories and systems have followed each other into nothingness; and dermatology as it exists to-day is largely the work of their hands.

The French School—In France a school of dermatology arose independently in the early years of the century. In 1808 Alibert published his *Description des Maladies de la Peau observées à l'Hôspital Saint Louis*, which he followed up two years later by a *Traité Théorique et Pratique des Maladies de la Peau* and several other works. The most valuable part of his publications was the illustrations; his writings only added to the darkness in which the whole subject of diseases of the skin was then enshrouded. His terminology was to the last degree confusing, his classification arbitrary, his descriptions often fanciful. Yet he contributed to the

advance of knowledge by directing the attention of more scientifically-minded workers to the subject. Among these was Biett, who adopted Willan's classification with some modifications and introduced it into France. Biett taught for many years at St. Louis, but the only record of his observations and experience is contained in the *Abrégé Pratique de Maladies de la Peau* of his pupils Cazenave and Schedel, which appeared in 1828. Yet, though he published nothing in the ordinary way, his teaching had a much more far-reaching influence than that of Alibert. In 1831 Rayer sketched out a plan of classification of skin diseases on a basis of morbid anatomy, dividing them into: (1) Inflammation; (2) morbid scretions; (3) congestions and hæmorrhages; (4) anæmias; (5) neuroses; and (6) deformities—thus anticipating Hebra in principle and to a considerable extent, in detail. Rayer's work is a mine of information as to the early literature of dermatology, and embodied the results of extensive clinical observations so accurate and so clearly recorded that much of it is of permanent value.

Among the leaders of the French school who followed Biett were, Cazenave, Gibert, Devergie, and Bazin, all of whom did something to advance the knowledge of skin diseases, though they were apt to let themselves be misled by a tendency to erect systems on unsound foundations. To them skin diseases were, for the most part, the expressions of some constitutional dyscrasia, which at best was an unnecessary hypothesis, and was sometimes, as in the case of the so-called "dartrous," "psoric," and "herpetic" diatheses, a myth Indeed, it may be said that in France dermatology was the "last ditch" in which these mediæval notions still fought for life. In recent years the yoke of the diatheses has been shaken off, and the labours of Hardy, Vidal, Besnier, and Brocq have placed the French school in the forefront of scientific dermatology, a position which, with such men as Darier, Thibierge, Wickham, to take the place of their seniors when they have to fall out of the ranks, it is in no danger of losing.

The German School—The year 1844 marked the beginning of a new era in the study of diseases of the skin, for it witnessed the first appearance before the scientific world of Ferdinand Hebra. That remarkable man breathed a new life into the dry bones of dermatology, and set it on a path of progress which has already led to great results. Hebra applied to the investigation of skin diseases the pathological teaching of Rokitansky. He classified them not according to their objective appearances, or to the structures supposed to be primarily or mainly affected, but according to the nature of the pathological process of which they were examples. He used the

experimental method, producing various lesions on healthy skin by artificial means, and observing the changes which they underwent when allowed to run their own course, and when modified by treatment of different kinds, In this way Hebra rationalised dermatology, ridding it of the superstitions as to dyscrasiæ with which it had before been infested, and giving to the treatment of skin disease a directness of purpose a simplicity of means undreamt of by his predecessors. Students of skin disease flocked from nearly every part of the world to sit at the feet of the Vienna Gamaliel, and the influence of his teaching was felt everywhere except in France, where, as has been said, the traditional belief in dyscrasiæ persisted till a comparatively recent period. Hebra's work has been carried on by Auspitz, Kaposi, and Neumann in Vienna, by Pick in Prague, Schwimmer in Buda-Pesth, Lewin and Lassar in Berlin, Neisser in Breslau, and many others.

If Willan was the creator, Hebra must be acknowledged as the greatest among the reformers of dermatology. This glory must be his in spite of the fact that his classification in its leading features had been anticipated by Rayer. Hebra, however, worked it out so fully as to make it his own; and his classification, though it has necessarily been modified as knowledge grew, notably by the influence of Virchow's "cellular pathology" and by the newer bacteriological doctrine, can never be superseded till an arrangement based on etiology becomes possible. Such a classification has already been attempted by Auspitz and after him by Bronson, but the time for it is not yet.

The American School—The history of dermatology in America has been written by Professor J. C. White of Harvard, and by Professor Louis A. Duhring of Philadelphia, from whom all that can here be said on the subject is taken.[6] For the first thirty years or more of the century little or no interest was taken in cutaneous affections in America. A story is told which, whether true or not, serves to illustrate the state of things in these days. A student asking for information as to a disease of the skin from a physician, was met with the reply: 'Sir, I know nothing of the skin diseases; you must go to a surgeon." On his applying to a surgeon, the answer was: "Sir, I must refer you to the physician." In fact, Duhring tells us a disposition existed to consign the whole of this branch of medicine to those outside the professional pale. No one seemed prepared to take up the matter. Still, even at that period, there was a demand for information on skin diseases which booksellers thought it worth while to supply. Bateman's *Synopsis* was republished at Philadelphia in 1818, a second edition being issued in 1824, and a translation of

the work of Cazenave and Schedel appeared in the same city in 1829, a second edition being published in 1832. In 1845 appeared the first American work on dermatology. It was entitled *A Synopsis of the Symptoms, Diagnosis, and Treatment of the more Common and Important Diseases of the Skin*, and its author was N. Worcester, Professor of Physicial Diagnosis and General Pathology in the Medical School of Cleveland. The book is described by Duhring as being little more than a compilation from the works of the French and English dermatologists of the day.

Meanwhile, other signs of a growing interest in the subject were not wanting. In 1836, an Infirmary for Diseases of the Skin was opened in New York, being the first institution of the kind established in the United States, and lectures on skin diseases were delivered there, and afterwards in some of the medical schools of New York between the years 1837 and 1854 by Dr. H. D. Bulkley, father of Dr. L. D. Bulkley, whose name is well known to all dermatologists.

At this time Paris was the centre of the dermatological world, and American students accordingly went there for instruction in the subject. Hence for many years American dermatology was the direct offspring of the French school, the influence of which was only slightly tempered by reprints of the works of Wilson and other English writers. At a later period Americans flocked to Vienna, and on returning home spread the doctrines of Hebra among their countrymen. As early as 1859 Hebra's teaching was made known in America by Prof. James C. White, who, two years later, gave the first course of lectures on diseases of the skin at Harvard. After the Civil War clinical lectureships on the subject were established in several important schools. In 1870 the foundation of the *American Journal of Syphilography and Dermatology* did something to promote the advancement of the knowledge of skin diseases in America, and the establishment of the American Dermatological Association in 1877 gave a powerful impulse in the same direction, which was further aided by the creation of the *Archives of Dermatology*. Yet in 1871 Prof. James C. White complained that as yet America had contributed little to dermatology, and that this branch of medicine had hardly then found a place among his countrymen as an acknowledged specialty. Now this reproach has been wiped away, and American dermatology, represented by Duhring, J. C. White, Bulkley, and others, is recognized as being in the van of progress.

The Fusion of the Schools—Each of the three great schools which helped to lay the foundations of modern dermatology had certain

marked characteristics. The English was essentially clinical, using classification only as a practical help in diagnosis; it observed. The French systematised, striding somewhat impatiently over facts to get at general formulas, which though plausible on paper, to often broke down in application. The German was pathological, giving attention mainly to mechanism and occasionally taking too little heed of the causes setting it in motion. Each school had thus the defects of its qualities; but each played an important part in the development of dermatology, and much of what was good in each still survives in the cutaneous medicine of the present day.

Now, dermatology is truly international, the different schools which were formerly as separate states having become fused into one scientific commonwealth. This has been accomplished by the translation of representative works of each school into the language of the others; by the multiplication of journals devoted to this special branch of medical science in which everything of value that is published in any part of the world is gathered up and summarised; by the facilities of communication which made it easy for the scientific pilgrim to visit every dermatological shrine where his devotion is likely to be rewarded with knowledge of some new thing; and by congresses, those marts for the exchange of scientific wares which have so powerfully aided in the diffusion of knowledge, in the extinction of national jealousies, and in the correction of provincial ways of thought. Dr. Johnson when at Oxford was overheard to say that he had a mind to see what was being done in foreign universities, "for an Athenian blockhead is the worst of blockheads." He thus vigorously expressed the truth that a man trained in a particular school is apt to be narrow if he knows nothing of any other. In the sphere of dermatology this kind of narrowness was especially exemplified in the French school, but neither of the others was entirely free from it. How could it be otherwise when they knew so little of each other? How slowly the work even of so brilliant a dermatologist as Hebra became known to the profession in other countries at a time comparatively recent is shown by the following passage which I quote from Pro. James C. White. Speaking of the middle of the Fifties he says: "It was not until the intelligence began to spread, slowly borne by word of mouth from country to country, that in an Imperial city of Austria there was a man teaching skin diseases as they had never been taught before, with unlimited means of clinical illustration, with the keenest eye for observation, with an unbounded amount of information drawn from many years of experience, with a self-restraint which no desire for premature

fame could tempt into hasty publication, and with a sound and logical mind, that the German school for dermatology some fifteen years ago began to be known and to advance to that pre-eminent position it now holds." Fame flies faster nowadays, but the very ease and rapidity with which the results of a man's work can be made known now lead to the publication of much that is inaccurate observation and immature speculation.

Progress in Knowledge—Turning now from the workers to the work that has been done, the most striking feature on the dermatology of to-day as compared with that of the beginning of the century is the knowledge of the nature and causes of skin diseases that has been gained. Willan and Bateman left little in the way of outward appearances for those who came after them to describe, but no real knowledge of pathological processes was possible till the microscope and other modern methods of research were applied to the study of diseases of the skin. This is the special achievement of the German School. The attention directed to processes has led us to recognize that many conditions which used to be looked upon as distinct affections are really different stages in the evolution of one and the same disease. In this way dermatology has been greatly simplified. Compare, for instance, the modern teaching as to eczema with that of Erasmus Wilson, with his six principal varieties—erythematosum, papulosum, vesiculosum, ichorosum, pustulosum, squamosum; and his ten subvarieties—marginatum, fissum, mucosum, scabidum seu crustaceum, œdematosum, tuberculosum, spargosiforme, sclerosum, verrucosum, neurosum. Then, according to the parts attacked, there was eczema, capitis, faciei, auriculare, mamillare, umbilicale, perineale. The varities of psoriasis were still more numerous—punctata, guttata, alphoides, nummularis, scutellata, orbicularis, annulata, circinata, vulgaris, gyrata, circumscripta, diffusa, confluens, discoidea, centrifuga, imbricata, figurata, inveterata; with the local forms—palpebrarum, labialis, præputii, scrotalis et pudendalis, palmaris, unguium; it is like the catalogue of the ships that bore the Danaans to Ilios. And for a long time nearly every writer on skin diseases thought it due to himself to show his inventiveness in the same way. It is no wonder that dermatology treated in this way was a terror to students and an affliction to practitioners.

Further simplification has resulted from our having learnt to distinguish between the primary lesions which are the notes of a particular disease and the lesions which result from secondary causes, such as injury from scratching or rubbing and the invasion of pyogenic micro-organisms. Much confusion and needless multipli-

cation of types were caused in former days by mistaking the accidental for the essential in such affections as scabies, eczema, ringworm, impetigo, and other conditions liable to complication by suppurative processes.

Pathological research has done much to elucidate the nature of growths, benign and malignant, of the skin. The work of Jacob Warren, Hutchinson, Dubreuilh, and Norman Walker in regard to rodent ulcer; and that of Kaposi in regard to sarcoma of the skin and xeroderma pigmentosum mark distinct advances.

Real progress in the science of medicine, however, is measured by the increase in our knowledge of the causes of disease. In this rsspect it may, I think, be said that as much has been done in dermatology as in any branch of medicine. The etiology of a very considerable proportion of skin diseases is now accurately known. Among the causes whose operation has been clearly traced, a prominent place is occupied by inoculable viruses which infect the system, such as syphilis, tuberculosis, leprosy—to mention only the more common. Ricord, Fournier, Sigmund, and Hutchinson, have shown how many and various are the cutaneous manifestations of syphilis, and with what versatile mimicry it assumes the form of other diseases of the skin. Tuberculosis has been proved to be accountable not only for lupus, but for affections formerly classed under the heads of lichen and erythema and for the other forms of skin disease included under the general term scrofuloderma. The sorting out of the cutaneous affections due to these two causes alone has greatly reduced the region of the unknown in the map of dermatology.

The Action of Parasites—Another direction in which the etiology of skin diseases has made decided progress is the recognition of the action of parasites. The idea that scabies is due to the irritation set up in the tissues by an animalcule, and ringworm by the growth on the surface of the skin of a vegetable mould, is so familiar to us that it is not easy to realize how recently the truth of these doctrines has been definitely established, and with what incredulity the discoveries were for a long time received. The sarcoptes scabiei had been seen by Avenzoar in the twelfth century, and later by Guy de Chauliac, Ambroise Paré, and others; and in the seventeenth century it was distinctly indicated as being the cause of itch by Bonomo and Cestoni. It was rediscovered more than once afterwards, but it was not till 1834 that Renucci, in Alibert's clinic, was able to show how it could always be found.[8] Yet in 1850 Antony Todd Thomson is allowed to say, without a word of protest from his editor Parkes, that itch is certainly "the result of a morbid poison, and that the

fluid of the vesicles or the pustules is the agent transmitting the disease: and while awarding Wilson credit for his accurate description of the acarus, Thomson expresses his inability to "accord with him in attributing the disease to that insect."[9] Still later we find a dermatologist like Devergie writing: "The acarus is a morbid product of the itch as the mycoderm is the morbid product of ringworm, as the insect of acne punctata is the morbid product of that disease, as the louse is the morbid product of pediculous prurigo. Ringworm is contagious through the medium of this mycoderm not only from child to child, but from the head of a child to the bark of certain trees, and the lousy evil[10] from person to person. Ringworm, acne punctata, and the lousy evil, do they originate the less spontaneously on that account? The means that we use to destroy the acarus, are they not also suitable for curing the eruption of itch?" The fact that only forty years ago a dermatologist of the first rank could thus in one sweeping anathema condemn root and branch the doctrine of parasitism in skin diseases is one of the most striking proofs of the youthfulness of scientific dermatology, and of the progress which it has made in its lusty childhood.

The discovery of the vegetable fungi which cause ringworm, favus, tinea vericolor, and erythrasma, unlike that of the itch mite, was not made in the Dark Ages, but almost in the full glare of the light of modern science; yet it was received with equally resolute disbelief by some of the leaders in dermatological Israel. In 1839 Schoenlein discovered the fugus which produces favus; in 1844 Gruby in Paris, and Malmssen in Stockholm almost simultaneously and quite independently discovered that which causes ringworm. Here, again, we find A. T. Thomson, in 1850, asserting in regard to favus that though the disease has been ascribed to a mycoderm, "there is no proof of that opinion," and in regard to ringworm, that "the pustules constitute the disease, and the mycoderm merely finds its habitat on them."[12] In the same year Cazenave[13] could scarcely bring himself to admit the existence of the achorion Schoenleinii, and with regard to fungi in general in their relation to skin diseases, he was emphatic in warning investigators against "the illusions of microphotography," and denied that these "mysterious atoms" possessed any pathogenic property. In 1863 Chausit, a pupil of Cazenave, argued strongly against the crytogamic origin of ringworm, concluding that "in the present state of dermatology there is no disease of essentially parasitic nature, and there is no such theory as antiparastic therapeusis."[14]

Gibert, who had long been an obstinate recusant, gave in his adhesion to the parasitic doctrine in 1866, but Cazenave never re-

canted his heresy, and Erasmus Wilson, who, after Cazenave had passed away, stood alone in his refusal to accept the teachings of modern science on this subject, also died an unbeliever. The brilliant researches of M. Sabouraud have recently proved that the disease hitherto known as ringworm includes two, and possibly more, distinct conditions caused by different species of fungi. It has also been shown that the disease may be transmitted from animals—particularly the horse—to human beings, a fact obviously of the greatest practical importance. Sabouraud and other observers in other countries have thrown light on the geographical distribution of the ringworm fungus, and the remarkable fact has been brought to light that the species which causes the most rebellious form of the disease is most frequently met with in London, is unknown in Italy, and very rare in Germany. This has an obvious bearing on the records of the results of treatment in those several countries. Another point which is suggested in recent investigations is that the boundary line between ringworm and favus is by no means so definite as has hitherto been believed. It is clear that there is yet much to be done in a subject which a short time ago was looked upon as worked out, and the mycology of which may be commended to young dermatologists as a field of study likely to be fertile in results.

Bacteria and Skin Diseases—During the past few years our ideas as to the action of parasites have undergone expansion. The influence of the great evolution in pathology brought about by the discoveries of Pasteur, Koch, and their disciples has been felt in the sphere of dermatology as in other departments of medicine, and we have learnt to look for the causes of many diseases in the world of the infinitely little which bacteriology has revealed to us. Already lupus, leprosy, carbuncle, glanders, sycosis, furuncle, impetigo contagiosa have been proved to be the result of the mischievous activity of specific micro-organisms. It is practically certain that syphilis has a like origin, but the particular microbe responsible for its production is still "wanted" by our scientific police. More than one has been arrested on suspicion, others are being closely shadowed, and there is every hope that the actual criminal will soon be found. Eczema is considered by Unna, who has done much for the recent advance of dermatology, to be of microbic origin. A similar causation is assigned to psoriasis, and by others to alopecia areata, acne, and certain forms of erythema. Quite recently Sabouraud has brought forward evidence which he thinks sufficient to prove that seborrhœa and common baldness are of the bacterial family of diseases. These views are not yet accepted by all dermatologists, but there can be little doubt that

as methods of research are perfected the "the sphere of influence" of bacteriology in relation to skin diseases will become greatly enlarged. Already it extends far more widely than the brief list of diseases which have been definitely traced to microbic agency would seem to show. In almost every case of skin disease the primary and essential process is at some period of its course complicated, and it may be overshadowed by secondary lesions, To bacteriology we owe the knowledge that these are due to the action of pyococci and streptococci, whose attacks the skin resists in health, but to which it falls an easy prey when diseased. The importance of this knowledge both in relation to diagnosis and to treatment can hardly be overestimated.

Other Lines of Advance—I can make only the briefest reference to other lines along which dermatology has advanced in recent years. Of these the most important has been the increased attention bestowed on the relations of various forms of cutaneous affections to disorders of the nervous system. In this field the most notable workers have been Bärensprung, Weir Mitchell, Morvan, Schwimmer, Radcliffe, Crocker, and above all Leloir, whose untimely death was a grevious loss to dermatology. A large number of skin diseases presenting the greatest diversity in their objective features have been shown to be dependent on lesion or functional disorder of some part of the nervous system. Many diseases such as zoster, erythema, pemphigus, sclerodema, and various forms of cutaneous œdema, hæmorrhage, and ulceration which used to be called "idiopathic"—the medical equivalent for the "visitation of God" in the simple etiology of the British juryman—are now recognized to be consequences of vasomotor or trophic disturbance. We also know that defective innervation plays a considerable part as a predisposing cause, making the skin less able to resist harmful influences of any kind—injury, cold heat, and irritants, whether chemical or parastic. In this way nervous disorder comes into play as a definite factor in many cases of eczema, lichen, and other affections. The late Mr. John Marshall threw out the pregnant idea that cancer might be an "anarchy of cells" due to loss of control by the nervous system. The same cause might account for some diseases of the skin. The neuropathology of the skin is a field that will well repay further cultivation.

Another line along which we have advanced is the establishment of a definite relation between certain constitutional states and affections of the integument. The tendency of the French school to look to the general system for an explanation of every blotch and pimple led them away from the truth no doubt, even to the invention of

a diathesis when one was wanted ; but some dermatologists have perhaps now gone a little too far in the opposite direction. It is well that with the all-conquering bacillus on every side extending the boundaries of his empire, we should not forget that other agencies have still to be taken into account. Gout has not the far-reaching influence in the production of cutaneous affections that it used to be credited with ; but it is sometimes a factor that must be reckoned with. The connections of certain forms of pruritus and herpes, of boils and carbuncles, of a particular variety of xanthoma with glycosuria is well known.

The influence of auto-intoxication requires to be more thoroughly studied than it has yet been, the effects of ptomaines should also be fully investigated. The serum treatment which is now being tried in diptheria and other diseases is making us familiar with toxin rashes ; is it not possible that the prolonged operation of some similiar cause might explain the origin of some skin diseases ?

Progress in Power—Bacon's aphorism that "knowledge is power" unfortunately does not always hold good in medicine. Yet we may fairly congratulate ourselves on a very decided gain in our power of dealing with skin diseases, especially in the last fifteen years. Progress has been made in three ways: (1) We have got rid of some superstitions; (2) we know better where to direct our attack; and (3) we have more effective weapons.

Among the superstitions that hindered progress, one of the most pernicious was the notion that skin disease was a natural issue for the escape of peccant humours—a safety-valve for the constitution. Hence in many forms of skin affection, and particularly in the case of eczema, it was believed to be dangerous to cure the cutaneous lesions, because the disease was thus "driven in" upon the internal organs. As a quaint illustration of this belief the following passage from our earliest English dermatologist, Daniel Turner, is interesting. Speaking of "Children's Scabs or Breakings-out," he quotes with implied approval the following admonition from "the most excellent Hildanus":

"Let Mothers have a Care how they set about the Cure of this Malady, unless it be so virulent as to hazard corrupting the Parts it lies upon. My eldest Son (says he) till he was seven Years old had not a Speck upon his Body, wherefore I often foretold that some sudden and mortal disease would seize him ; and, indeed, being taken with a Stoppage of Urine, he died the seventh Day of the Disease of a great Inflammations of the Kidnies and Parts adjoining which turned to a Gangrene: Nature, to wit, not being able to purge the

Body of vitious Humours by the Itch, they in the seventh Year, as by a critical Expulsion, fell suddenly from other Parts upon the Loins. In my practice I have met with several Diseases both internal and external in young Children in whom these Breakings-out were either not naturally expell'd or violently dry'd up' Therefore, let the honest Physician abstain from Medicines: and if there be a Necessity. let the pain of this Itch in Chlidren be only mitigated with Fresh Butter or with the same washed in Rosewater.[15]"

Willan and the older dermatologists had the fear of "repelling" diseases of the skin ever before them. Perhaps the most grotesque instance of the superstition is a case referred to by Duhring as being recorded by a Boston Doctor. This enlightened practitioner finding two African children afflicted with body lice put them into a warm bath; on being suddenly freed by this means from their vermin, they incontinently "dropped down and expired immediately." But the fear of "driving in" skin disease is not yet by any means extinct in the medical profession or even among dermatologists; it would be easy to quote passages in proof of this from living writers of authority.

Increased precision in the direction of attack naturally arises from increase of knowledge as to the nature, and especially as to the causation, of cutaneous affections. Nowadays we at least do not, as Archbishop Whatley said of the common run of preachers, "aim at nothing and hit it." The polypharmacy in which the older school of dermatologists delighted is almost a thing of the past, and patients are not physicked in the wholesale and indiscriminate manner that used to be thought necessary for the correction of their constitutional depravity. Internal medication is used only in response to definite indications, and we work the "miracle of cure," to use a too celebrated phrase, with the help of a simpler, pleasanter, and more efficient pharmacy. The improvement in our weapons lies mainly in the methods of preparing and employing the old remedies, but newer ones are not wanting.

The administration of remedies by hypodermic injection may be mentioned as one of the most promising improvements in constitutional therapeusis; the use of mercury in this way in syphilis is becoming more and more common. The serum treatment has not yet established itself in dermatological practice, but good results from it have been reported in a few cases of syphilis, lupus, leprosy, and one or two other affections. Tuberculin as first prepared by Koch has in my own hands and in those of some other observers proved of distinct use as a preliminary to surgical treatment in lupus. The newer

tuberculin lately "placed on the market"—I am sorry to have to use this commercial phrase, but it accurately expresses the fact—gives promise of much greater usefulness, but it is too soon yet to pronounce a definite judgment as to its real efficacy. Thyroid extract has a powerful immediate effect on the integument, but my own experience does not lead me to attach much value to it as a remedy in skin disease, and that opinion is confirmed by the experience of several other dermatologists.

But it is in our means of local treatment that the improvement of our weapons is most marked. The application of the parasitic doctrine to skin diseases has led to the introduction of a large and constantly increasing use of parasiticides; in carbolic acid, boric acid, salicylic acid, resorcin, creolin, thymol, salol, dermatol ichthyol, chrysarobin, to mention only a few, we have powerful agents that the mid-century dermatologists knew not of. Then both the preparations and the methods of applying them are cleanlier and more effective. The pastes, plaster mulls, varnishes, soaps, sticks, and other devices for the application of remedies which we owe to the ingenuity of Pick, Unna, Lassar, Brooke, and others have revolutionized the local treatment of skin disease. Our surgical methods and appliances, our antiseptics, our cauteries and so forth, are also immensely superior to those in use twenty years ago.

Do we cure more than our scientific forefathers did? I think we may unhesitatingly answer, "Yes." Parasitic diseases are certainly more under our control, and in nearly every form of skin disease we can treat symptoms more effectively, and give relief even where we fail to cure. We are altogether milder in our methods than the dermatologists of a former day; we soothe instead of irritating; we strengthen instead of depleting; we leave Nature to herself instead of thwarting and teasing her into active rebellion. But there is still a good deal of over treatment and I not infrequently see patients whose disease has been aggravated into frenzy, so to speak, by the continuous goading of injudicious treatment. The policy of "masterly inactivity" finds a large sphere of application in dermatology.

I have given a review of the past, very hasty and imperfect, but I can only, like swift Camilla, skim across the plain. I may be allowed to conclude with a peep into the future. Whether the newer medication with serums and organic extracts holds in it much promise for the treatment of skin diseases it is of course impossible to say; I am, however, inclined to think that in this direction, and in that of increase of power of dealing with parasitic affection lies the path of development in dermatological therapeutics likely to lead to the best

results. It will be long before a complete classification of diseases of the skin is possible, but this is of course impossible to say; I am, however, inclined to think that in this direction, and in that of increase of power of dealing with parasitic affections lies the path of development in dermatological therapeutics likely to lead to the best results. It will be long before a complete classification of diseases of the skin is possible, but this is of no great practical importance. A real stumbling block, however, is the confusion of terminology that still exists. It would be a very real help to progress if a nomenclature at once simple, precise and yet descriptive, and international could be devised.

REFERENCES.

[1]On Cutaneous Diseases, vol. i., London, 1808, Introduction, p. 11.

[2]Willan, loc, cit.

[3]Description and Treatment of Cutaneous Diseases, Order I, Papulous Eruptions on the Skin; London, 1798.

[4]Willan's pupil, Bateman, admits this (A Practical Synopsis of Cutaneous Diseases, preface, p. ix., dated 1813).

[5]A Practical Treatise on Diseases Affecting the Skin, London, 1850, p. 188.

[6]James C. White: Dermatology in America, being the President's address before the first meeting of the American Dermatological Association at Niagara Falls, New York, September 4th, 1877; reprinted from the Archives of Dermatology, January, 1878. Louis A. Duhring: The Rise of American Dermatology, being the President's address at the third annual meeting of the American Dermatological Association in 1879; and The Foundation of American Dermatology, being the President's address before the same body at its fourth annual meeting in 1880.

[7]Review of Modern Dermatology, reprinted from the American Journal of the Medical Sciences, April, 1871.

[8]Dubreuilh, Les Doctrines Parasitaires Dermatologie, Bordeaux, 1892.

[9]A Practical Treatise on Diseases Affecting the Skin, London, 1850, pp. 134-136.

[10]I hope I may be allowed to use a phrase which has the authority of Daniel Turner in translating Maladie Pédiculaire.

[11]Traité des Maladies de la Peau, 2nd edition, 1857.

[12]Op. cit., pp. 119-123.

[13]Traité des Maladies du Cuir Chevelu.

[14]Union Médicale, 1863.

[15]A Treatise of Diseases Incident to the Skin, 5th edition, London, 1736, chap. iv., p. 67.

Original Communications.

THE VALUE OF MODIFIED COW'S MILK IN INFANT FEEDING.

BY

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My effort this evening is not to present an exhaustive study on the value of modified cow's milk in infant feeding, but rather to review briefly the principle of the use of modified cow's milk and to report the experience of others, as well as my own, in its employment and limitations in practice.

As civilization advances, a constantly increasing proportion of mothers are unable to nurse their children. Among the rich luxurious habits of life, and among the poor over crowding with its attendant evils and poor food bring about the same result, loss of the function of lactation. Substitute or artificial feeding of infants is thus becoming daily a more and more important problem.

The offspring of all mammals are carnivora, and the human infant is no exception to this rule.

The constituents of the food of all young mammals are essentially animal and never vegetable. Therefore a vegetable element in the food of young infants would seem to be a foreign element.

The theory that the addition of such elements tended to make the curd of milk finer and therefore more easily digested has been proved to be fallacious.

Empirical feeding of infants, hitherto almost universal, has ever introduced a considerable proportion of vegetable matter into infant foods.

For our present scientific method of infant feeding we are indebted chiefly to Dr. Rotch, of Boston, who, associated with Mr. G. E. Gordon, a veterinarian, has simplified the problem and brought it to such practical perfection that we can now write a prescription for a food, with the same certainty that it will be accurately filled, as when we write a prescription for an apothecary.

Maternal milk is the best food for infants and there is but little doubt that no food will ever be found which will fully supply its deficiency.

Human Milk.—Human milk must therefore be the standard we must copy.

But it is well known that human milk is subject to great variation as those who have had much experience with wet nurses know Breast milk on which one infant may thrive, may prove utterly unsuited for another of the same age and weight.

A brief review of the composition of human milk and of some of its variations may not be out of place at this point. According to the most recent analysis, the composition of human milk is as follows:

	Average.	Common Variations.
Fat	4.00	3.00 To 5.00
Sugar	7.00	6.00 " 7.00
Proteid	1.50	1.00 " 2.25
Salts	0.20	0.18 " 0.25
Water	87.30	89.82 " 85.50
	100.00	100.00 100.00

The fat is subject to considerable variation but the percentage of four is about the average. Roughly speaking the proportion of fat to proteid in human milk is three to one.

The sugar is simply lactose in solution. Its proportion varies from 6 to 7 per cent. and is very constant.

The proteids of human milk are very complex and though much work has been done upon them they are not as yet completely understood. The most important are casein, lactalbumin, and lactoglobulin. The proteids vary from 1.50 to 2 per cent. being high at first but soon averaging 1.50 per cent.

The salts are numerous but average about 0.20 per cent. and are very constant throughout lactation.

The reaction is generally slightly alkaline and it is as a rule free from germs.

The amount supplied to the infant varies from 10-16 oz. per diem at the end of the first week, to 30-40 oz. from the sixth to the ninth month.

When the analysis of human milk yielded us definite knowledge of its elements and their proportions we were in a position to look for an efficient substitute.

The milk of all animals must be modified to correspond to human milk; hence cow's milk as being most easily obtainable is best suited for the purpose.

Milk of Cows of Various Breeds.—There is not time for me to refer even briefly to the investigations which have been carried out as to the proportion of the elements in the milk of various breeds of cows. Suffice it to say that by scientific feeding and mixing of the milk of various breeds, a standard milk has been obtained; that is a milkcontaining a fairly steady average in the percentage of the various elements.

Cow's Milk.—Cow's milk contains exactly the same constituents as human milk but in different proportions. The proportion of the elements is: Fats 4.00, sugar 4.50, proteids 4.00, ash 0.70. It is acid in reaction and is apt to be contaminated with germs.

We have thus in cow's milk, an excess of proteids and salts and a deficiency in the amount of sugar while the fat is about the same.

The problem was to obtain the elements separately, and then to recombine them to meet the need of individual cases. For the power to do this we are indebted as I said before to Dr. Rotch.

Two questions suggest themselves at this point. (1) In the process of separation of the elements will any change be brought about which would spoil them for use? (2) Is there not some difference in the composition of the proteids of cow's milk which causes them to be more difficult of digestion by the infant?

The process of separation has not been proved to cause any change in the elements. The emulsion of the fat is not disturbed.

The question of the proteids not yet being settled, it is difficult to say if any difference exists, but if there is it is not sufficient to be seriously considered.

Dilution with water, which is necessitated by the proteids, brings the salts down to their proper proportions, so they do not require separate consideration.

New Nomenclature.—In modern scientific feeding of infants it is necessary for the sake of accuracy to adopt a new method of nomenclature, as it were, which makes it seem at first sight a little difficult of comprehension. Instead of specifying the amount of cream and milk in a food we indicate the proportion of the elements.

This difficulty is soon mastered, as it must be, in order to properly prescribe milk in infant feeding.

It is this power of specifying the elements which enables us to modify the food to suit each individual case, as by varying the elements we can find out exactly which is at fault in the patient being fed.

We are fortunate in having in this city a milk laboratory where this process of preparing cow's milk for the scientific feeding of infants is carried out.

The Walker-Gordon Laboratory Co., has adopted the term "Modified

Milk" to designate their process of putting into effect the prescriptions of physicians upon any basis of milk they may elect to use.

These laboratories have the oversight of the feeding and care of the cows; and the handling of the milk to insure its purity, cleanliness and freshness. They have trained men to carry out the preparation of the food called for by the prescriptions.

At the present time there are about 30,000 infants being fed by these laboratories in the United States and Canada, and they are everywhere giving satisfaction.

Rotch in a recent paper said: "The position which it seems fair for us to take is that the principle of the modification of milk is scientific, is practical, is right, and that in the milk laboratory we have one more instrument of precision to aid us in our work."

In infant feeding there are three important factors. (1) Quantity. (2) Quality. (3) Idiosyncrasy. It is impossible to give exact rules for modification, but in ordering milk for an infant not only its age, but its weight must be taken into account. A large healthy child for its age requires, not infrequently, the quantity and percentage of food advised for an average child of some weeks older.

As a rule it is well to begin with a low percentage and work up till a percentage and quantity is reached which the infant will digest and gain an average amount in weight per week upon.

It is absolutely necessary to insure success, that a close watch be kept of the infant's weight. It should be weighed at least once a week. The weekly gain in a healthy infant should be from three to eight ounces; at four months an average infant should have doubled its birth-weight and at one year have trebled it.

As a rule I think there is a tendency to give an artificially fed infant too large a quantity of food.

Amount of Feeding.—During the first month of life, an average infant requires about ten feedings of from one to two ounces daily. During the second and third months, from two to four ounces and so on. As the amount is increased the number of feedings must be reduced and the interval between each lengthened.

An average formula for a healthy infant during the first week of life would be: Fat 2.00, sugar 6.00, proteid .60. The percentage may then be gradually increased to reach: Fat 3.00, sugar 6.00, proteid 1.00, by the end of the first month. By the third month a healthy infant thrives well on a fat 4.00, sugar 7.00, proteid 1.50 mixture.

As a rule those of largest experience find they get the best results from rather low percentage mixtures.

Modifications called for by Particular Symptoms,—Proteids.—The

modifications called for by particular symptoms are important. If the proteids are in excess they are passed as undigested curds in the motions. These proteid curds are small and hard. It is proteid indigestion which gives rise to most of the colic of early infancy and as a rule a proper management of the proteids means success in infant feeding. Proteid indigestion may be shown by restlessness, sometimes by diarrhœa, but more frequently by constipation; the latter is prone to occur with a great excess of proteid. Vomiting of small proteid curds is not infrequently met with.

Fat.—An excess of fat is usually shown by frequent motions of normal colour, containing large soft flocculi, which we call fat curds. Vomiting and regurgitation also occur from an excess of this element in the food. It is rare that fat indigestion is a cause of colic. Dry hard motions occur if the percentage of fat is too low.

Sugar.—If the sugar percentage is too low the gain in weight is apt to be slow. Excess of sugar is shown by colic and thin acid motions, which cause irritation of the buttocks, and have a sour yeasty odour. Generally we have eructations of gas and a sour odour to the breath, with an excess of sugar in the food.

Holt summarises the most important indications as follows: "If not gaining in weight without special signs of indigestion, increase the proportions of all the ingredients; if habitual colic, diminish the proteids; for frequent vomiting soon after feeding, reduce the quantity; for the regurgitation of sour masses of food, reduce the fat, and sometimes also the proteids: for obstinate constipation, increase both fat and proteids."

Premature Infants.—The signal value of the exact modification of cow's milk as carried out by the laboratories is shown in the feeding of premature infants. Here the gastro-enteric tract is undeveloped and unfit to digest even human milk. I have had experience of a few successful cases of this kind where at the start the infant could only digest a food containing fat 1.50, sugar 3.00, proteid .25, of which a drachm every hour was administered. It is most satisfactory to see cases of this kind improve, and finally take and digest easily the mother's milk. I think that at the present time it is unwise to attempt any other form of feeding in the case of these premature infants.

Unhealthy and Feeble Infants.—The proper feeding of unhealthy and feeble infants, is one of the most trying and difficult undertakings. One is not infrequently called upon to superintend the feeding of an infant of five or six months of age, weighing scarcely more than at birth, with a digestive tract that has been struggling to nourish its

proprietor from all kinds of so-called infant foods, and has finally given up the attempt or refuses to retain anything committed to it. These are the most trying cases and require the greatest care and perseverance to ensure success. No gain in weight can be looked for till the digestion has improved. In the modification for these cases, as a rule the sugar is not at fault and need not be reduced below 4-4.50 per cent. It is the proteid that gives the most trouble, then the fats.

It is well to start these cases on a formula of about: Fat 2.00, sugar 6.00, proteid .60, and then gradually increase as the symptoms of indigestion pass away. In my experience, at first small quantities at short intervals, then larger quantities of the same formula at longer intervals, give the best results.

It is extraordinary in these cases what severe symptoms will follow the slightest excess of the element of the food at fault, thus the increase in percentages must be made with the greatest care and precaution.

Marasmus.—In the treatment of marasmus cases in children, of from 6 to 18 months, it is not infrequently the case that the fat must be kept low, while the proteid can be quite rapidly increased.

Diarrhœa.—In the treatment of summer diarrhœa the results of modified milk feeding are most satisfactory.

In a series of 115 cases treated under Dr. Rotch's direction last summer, five died, one was not improved and one hundred and nine recovered. The average age of the infants was 6.42 months. The milk was pasteurized in all cases; the average number of feedings was 7.5, with an average amount of 4.5 ounces. The average percentages were: Fat, 2.6; sugar, 6.8; proteid, 1.2. The important point is to keep the percentage of fat as low as possible.

The chief objection to modified milk, as prepared by the laboratories, is the expense. But it is a rule of life that one cannot have a good thing without paying for it. The average expense is from $2.10 to $2.40 per week, which includes bottles and nipples, and cannot be considered excessive when the whole process is considered.

For some years I have, in feeding infants, rarely made use of anything but modified milk, and the more experience I gather the stronger is my faith in this scientific and accurate method.

Of course, in home modification one cannot hope to obtain any great degree of exactness, and, therefore, there is apt to be a greater proportion of failures.

Home Modification.—Home modification is inaccurate because it is impossible to procure a standard milk and cream. Rotch recently

had the cream from a reputable dairy tested on four successive days, with the result of a variation in the samples of from 10.13 to 28.34 per cent.

Then it is difficult to secure the care and attention to detail from the parents or nurse necessary to ensure success.

A safe milk cannot be obtained under ordinary circumstances in large cities. This difficulty cannot be overcome until the public has been trained to recognize the advantages of a pure milk supply, and is willing to pay a sufficiently high price for it to ensure the conscientious care necessary on the part of the producer.

The relationship between contaminated milk and the severe diarrhœas of infancy is too well known to be more than referred to.

Provided the milk is fresh when delivered, fairly accurate results may be obtained, in healthy cases especially, from home modification.

It has been my habit to depend upon a 12 per cent. and an 8 per cent. cream, diluted as required by a 6, 7 or 10 per cent. sugar of milk solution. With these, several of the most ordinary percentage food mixtures can be obtained.

I usually order the cream of the percentage desired from the laboratory, where it is pasteurized before delivery.

A 12 per cent. cream may be obtained by taking two parts of gravity or skimmed cream (16 per cent.) and diluting with one part of milk.

8 per cent. cream may be obtained by diluting one part of skimmed cream with two parts of milk.

The sugar solutions are obtained by adding sugar of milk to boiling water in the following proportions ;

A 10 per cent. solution by adding one ounce of sugar of milk to ten ounces of water.

A 7 per cent. solution by adding one ounce of the sugar to fourteen ounces of water.

A 6 per cent. solution by adding the same quantity of sugar to sixteen and a half ounces of water.

The alkalinity is secured by adding lime water or bicarb. of soda to the food as required.

Let us suppose, for example, that we wish to prescribe a food for a healthy infant of one month, of average weight. We would require ten feedings of two ounces each with the following percentages : Fat 3.00 ; sugar, 6.00 ; proteid, 1.00.

This is prepared each morning by diluting five ounces of a 12 per cent. cream with fifteen ounces of a filtered 7 per cent. sugar solution.

A half teaspoonful of soda bicarb. is added, and the food put on the ice and used as required.

The dilution here is one part of the cream to three of sugar solution. By adding two and a half parts of sugar solution to one part of the cream, one would have a food containing: Fat, 3.50; sugar, 6.00; proteid, 1.20, and so on.

If the physician is careful to give exact directions in writing any intelligent person can prepare the food.

As to results. In private practice, with healthy infants, I have seldom failed to obtain good results with home modification, where those in charge of the infant were intelligent and careful in the preparation of the food.

In the Montreal Foundling and Baby Hospital we have been using modified milk for the past eighteen months, with the most satisfactory results.

As we have become more familiar with the practical working of this method of feeding our results have improved. We have at present forty-four infants in the hospital, which is greatly overcrowded, and not one of them is the subject of marasmus.

Our mortality during the first four months of this year is half of what it was during the same period of last year.

The admissions so far this year were exactly double those of the same period last year.

We attribute our success in a great measure to this system of feeding. Most of the modification of food is done in the hospital by the nurse girls in training.

Recently, in order to test whether pasteurization of the food could be dispensed with, the infants were fed on unpasteurized milk. In a few days every infant so fed was suffering from indigestion and passing green motions with undigested curds. These troublesome symptoms disappeared entirely, without the use of drugs, on resuming the pasteurization.

The Walker-Gordon Co. report having put up prescriptions for over two thousand physicians with a mortality of $2\frac{1}{5}$ per cent. in healthy infants.

In closing I may be permitted to quote the recent utterances of two of the most eminent authorities:

Dr. Holt, of New York, says: "After two years' experience I have found the laboratory of great value in difficult cases of infant-feeding, and it soon becomes almost as much of a necessity to the physician practising among young children as does the apothecary shop to the general practitioner."

Dr. Rotch, in a paper read before the New York Academy of Medicine on April 3rd last, stated as follows: "I have never yet seen an infant who was carefully fed on milk during the first ten or twelve months of its life, by carefully changing the percentage of the milk constituents, and on nothing else, not enter on its second year with firm flesh and an average development. I have found the teeth to be sound, and to come at the usual age. I have found the functions of sitting, walking, standing, and the amyolytic functions all appear and develop normally. I have followed these children into their third, fourth and fifth years, and have found them strong, ruddy, with good bones and teeth, and with digestions which permit them to be fed on a general mixed diet of all the food elements."

STRANGULATED UMBILICAL HERNIA—OPERATION AND RECOVERY.

BY

R. E. WEBSTER, M.D., C.M., Brockville, Ont.

As a successful operation for strangulated umbilical hernia occurring after the seventieth year is rare, the following case is of interest.

On the evening of May 12, 1897, I was called out of town to Mrs. P., a large fleshy woman, weighing about 200 lbs., aged 71 years, married, mother of seven children.

The patient was found to be suffering from an unreduced umbilical hernia, which had become strangulated about four hours previously. During this time she and her husband had been making unsuccessful attempts at reduction.

The patient gave a history of having had an umbilical hernia of twenty-five years standing, which had always been readily reducible until two years ago ; since which time she has had considerable difficulty in reducing it when it escaped, an accident occurring very frequently, on account of the difficulty in retaining it with a truss, because of the unusually fat abdomen.

The patient complained of a good deal of pain, and was vomiting at intervals of about ten minutes. Pulse 90. Temperature normal. Face anxious.

The large, fat abdomen was somewhat distended ; the tumor protruding about the size of a fœtal head.

The skin over the tumour was much discoloured from the prolonged attempts at reduction.

The patient was anæsthetized, and after repeated attempts at reduction, without success, was removed to the Brockville General Hospital, a distance of six miles, arriving there in fairly good condition. As the vomiting was more frequent and the pain more severe, immediate operation was decided upon.

Assisted by Drs. Macaulay and Harding, the patient was etherized at 2 a.m., the operation being performed by the aid of electric light.

An incision was made through the skin exposing the sac, which was much thickened.

On opening the sac, it was found to contain several ounces of fluid, about three feet of deeply congested small intestines, and about six inches square of omentum.

The ring (about one inch in diameter) so tightly constricted the mass that a hernia knife could not be inserted through it with safety.

The skin incision was extended downwards, and the ring opened from below, relieving the constriction.

The intestine, being in fairly good condition, was returned to the abdomen with some difficulty, being much distended with gas.

The omentum, being firmly adherent, was tied off in sections with catgut and removed.

The sac, which was very adherent to the ring and abdominal wall, was dissected out and cut off.

The ring was closed with silk, and the abdomen by three rows of sutures, in the usual way, the operation occupying forty-five minutes.

The patient suffered much from shock, but, rallying, made a gradual recovery, leaving the hospital at the end of seven weeks, in good condition.

At this date, August 26, 1897, patient is in good condition with a firm cicatrix, and shows no sign of any return of hernia.

RETROSPECT

OF

CURRENT LITERATURE.

Medicine.

UNDER THE CHARGE OF JAMES STEWART.

The New Tuberculin.

BUSSENIUS. "Einge Mittheilungen über die bisher bei Anwendung des TR-Tuberculino, gesammelten, Erfahrungen."—*Deutsche Med. Wochenschrift*, July 8th, 1897.

SCHULTZE. "Kurze Mittheilung über das neue Kochische Tuberculin.' —*Deutsche Med. Wochenschrift*, July 8th, 1897.

The first named observer reports on 19 cases treated with the new tuberculin. Four cases presented lupus, twelve had tuberculous laryngitis, two tuberculosis of the lungs and one was a subject of asthma.

The largest number of injections in a single case was twenty-five, while the largest single injection given was 4 c. c.m., or 40 m.g., of the solid substance.

The patients were under treatment for a variable time, the longest time being 65 days, the shortest 29 days.

After these days were ended a period of quietness, *i. e.*, without treatment, was allowed to elapse and then the old preparation of tuberculin was used, but in all cases (19) no reaction was produced. It is the aim in administering tuberculin to avoid all reactions both local and general and so to increase the dose until immunity is induced. Bussenius found only four in whom the larger doses failed to produce a reaction. In the use of this new remedy every precaution was taken against infection and in the course of the writer's observations no untoward events were detected.

As to beneficial changes in the tuberculous areas themselves the following summarizes his remarks:

In the pulmonary cases no changes in the infiltrated areas could be

established. The ulceration on the pharynx and larynx of cases so treated showed tendency to cicatrize but without the formation of redness and the reaction œdema previously described.

Whether this treatment has special advantages in such cases the author says he is not in a position to decide.

The cases of lupus showed decided local reaction.

Schultze of Bonn, reports the use of this agent in 9 cases.

Concerning two of the cases beneficial results cannot be recorded. In four others no changes were noticed. In another case one of dry pleurisy, improvement was noticed during treatment.

In the remaining two treated in the out-patient department good results are assigned to the tuberculin.

SIEGMUND WERNER. "Beiträge Zur Pathologie des Ikterus Syphiliticus."—*Münchner Medicinische Wochenschrift*, No. 27, 1897.

Dr. Werner has recently written upon this subject reviewing the literature upon the same and arranging the various views as to the pathological conditions believed to be at the bottom of such cases.

The cases during a period of nineteen years at the St. George Hospital in Hamburg, numbered 15,799 and Dr. Werner's review of them shows icterus reported 57 times in early syphilis. Thus only .37 per cent. of all cases presented this sign.

He states that the following points may characterize the jaundice of syphilis, viz.:

1. It usually occurs early, *i. e.*, in secondary stage of syphilis.

2. It may be simultaneous with the occurrence of fresh specific manifestations.

3. It is influenced by the antiluetic treatment.

4. It may occur suddenly without premonitory or accompanying gastric disturbances.

Again, as a result of his review of observations made in these cases it would appear that the previous rate of occurrence per centum is too high, having formerly been reckoned at 1.4 per cent.

Jaundice of syphilis occurs more frequently in women than in men and in about three-quarters of the cases it is coincident with the first eruption or its first recurrence. Rarely does it occur later.

The intensity of the icterus is variable. Pruritus is rare. In the majority of the cases the intensity of the jaundice increases with the beginning of the use of mercury and shortly after rapidly diminishes. The duration of the colour varied from 14 days to eight weeks.

Syphilis with icterus was noted generally of a severe type, the attacks of eruption following each other in rapid succession. The

various theories concerning the pathogenesis of syphilitic icterus in the early stage are briefly presented.

1. Compression icterus, due to pressure of enlarged glands in the portal fissure.

2. Icterus, due to the presence of papules in the intestinal tract, analogous to the eruption on the skin.

3. Icterus, due to an inflammatory process in the liver. In such a process hyperæmia of the bile ducts and epithelial desquammation hinder the out-flow of bile.

4. Icterus, due to intestinal inflammation acting as intestinal catarrh in ordinary cases.

5. Icterus due to changes of syphilitic nature in the vessel walls.

6. Then there is the chemico-toxic theory. A catarrhal condition similar to that due to phosphorus, lead, etc., being induced by the syphilitic toxines.

7, Then again it is claimed that by syphilis the normal function of the liver cells is disturbed and this results in jaundice.

W. F. Hamilton.

Reviews and Notices of Books.

International Clinics: A Quarterly of Clinical Lectures on Medicine, Neurology, Surgery, Gynæcology, Obstetrics, Ophthalmology, Laryngology, Pharyngology, Rhinology, Otology and Dermatology, and specially prepared article on treatment. By professors and lecturers in the leading medical colleges of the United States, Germany, Austria, France, Great Britain and Canada. Edited by JUDSON DALAND, M.D., Philadelphia, Instructor in Clinical Medicine and Lecturer on Physical Diagnosis in the University of Pennsylvania, Assistant Physician to the Hospital of the University of Pennsylvania, Professor of Diseases of the Chest in the Philadelphia Polyclinic, Fellow of the College of Physicians, Philadelphia; J. MITCHELL BRUCE, M.D., F.R.C.P., London, England, Physician to and Lecturer on the Principles of Medicine in the Charing Cross Hospital; DAVID W. FINLEY, M.D., F.R.C.P., Aberdeen, Scotland, Professor of the Practice of Medicine in the University of Aberdeen, Physician to and Lecturer on Clinical Medicine in the Aberdeen Royal Infirmary, Consulting Physician to the Royal Hospital for Diseases of the Chest, London. Volumes I. and II. Seventh series, 1897. Philadelphia: J. B. Lippincott Company. 1897.

These volumes are neatly gotten up and the illustrations are good. As implied by the title, they contain a collection of clinical lectures, many of them being of considerable merit.

In volume I. the first lecture is on the Rules Governing the Treatment of Appendicitis, by J. William White, M.D., Professor of Clinical Surgery in the University of Pennsylvania. It is a careful, conservative presentation of the subject and is itself probably worth the price of the volume. A lecture by W. W. Keen, on Literary Method in Medicine, should be read and its precepts followed by every practising physician and surgeon. Other noticeable articles are the Treatment of Psoriasis, by Cantrell; Tuberculosis of the Larynx and Its Treatment, by Hoch; the Treatment of Pneumonia, by Cecil, and many other articles of interest.

Volume II. opens with an article on the Treatment of Presbyopia, by Jackson, and this is followed by a valuable lecture on the Treatment of Puerperal Eclampsia, by Herman, Senior Obstetric Physician to the London Hospital. The subject is dealt with in an eminently practical manner, bleeding, emetics, purgation, chloroform, morphine, chloral, pilocarpine and baths being discussed and the indication for their use indicated. Then follow articles on Fracture of the Tibia and Fibula, with remarks upon the use of splints and plaster of paris, by Roberts; Septic

Wounds and their Treatment, by Maylard; the Treatment of Chronic purulent Otitis Media, by Burnett, etc., etc. The above titles are mentioned simply to show the general character of the work. The material is gathered from a wide field, and the two volumes contain a great many interesting and instructive clinical lectures.

The Roller Bandage, with a Chapter on Surgical Dressing. By WILLIAM BARTON HOPKINS, Surgeon to the Philadelphia Hospital. Fourth edition. Philadelphia: J. B. Lippincott Company. Montreal: Chas. Roberts.

The design of the writer is to teach bandaging more by the illustrations than by the descriptions thereof and in this way make the book as concise as possible. The book opens with a definition of what a roller bandage is and of the material of which it may be made. It would be well if the directions for cutting bandages were more explicit, for it is exceedingly difficult to cut a bandage straight, unless a thread is first drawn. Full directions are given how to roll a bandage and how to estimate the tension with which one should be applied; then the special bandages are taken up, beginning with the head and ending with the lower extremities.

The work ends with a chapter on surgical dressings, their preparation and sterilization. In the preparation of plaster of paris bandages no information is given as to the kind of crinoline to be used, and on this the success of the dressing very largely depends, for should it contain too much starch, the dressing dries too slowly, and should it contain none at all, it is difficult to apply it before it hardens.

The book is short and yet contains all the essentials of bandaging. The system pursued makes it exceedingly easy for reference and the illustrations, being drawings from photographs, instead of reproductions of photographs, serve the purpose for which they are intended exceedingly well. It will without doubt prove a very useful book to both students and nurses.

Society Proceedings.

THE CANADIAN MEDICAL ASSOCIATION.

The Thirtieth Annual Meeting of this Association was held in Montreal on August 30th and 31st, 1897. Dr. V. H. Moore, Brockville, presided, and the sessions were well attended by members from all parts of Canada. The President was accompanied on the platform by the Retiring President, Dr. James Thorburn, of Toronto; the General Secretary, Dr. F. N. G. Starr, of Toronto; Dr. Roddick and Dr. J. M. Beausoleil, of Montreal; Dr. Wm. Osler, of Baltimore; Dr. J. E. Graham, of Toronto; Dr. Wm. Bayard, of St. John; Dr. T. T. S. Harrison, of Selkirk; Dr. J. J. Bray, of Chatham, the Past Presidents of the Association, as well as a number of representatives from the United States.

Dr. James Thorburn, the Retiring President, briefly addressed the meeting and introduced his successor, Dr. V. H. Moore. Dr. Roddick, Chairman of the Local Committee, extended a cordial welcome to the visitors. He was followed by Dr. Moore, who delivered the Presidential address which we published last month. A vote of thanks to the President for his able address was proposed by Dr. Bray, of Chatham, and seconded by Dr. Beausoleil, of Montreal.

This was carried unanimously.

Several new members were elected and then the nominating Committee was balloted for and the following were elected: Drs. Bell, Marsil, Stewart, Beausoleil and Parke, Quebec; Cameron, Graham and Shaw, Ontario; Muir and McKeen, Nova Scotia. Walker and Coulthard, New Brunswick; McLeod, Prince Edward Island; Thornton, Manitoba; Tunstell, British Columbia; Dr. McKeen tied with Dr. Garrett for the last place, and was elected by the casting vote of the President, who gave it "in favour of Nova Scotia."

The question of Interprovincial Registration was now taken up. Dr. Walker, speaking on behalf of the Council of the Province of New Brunswick, said they had considered the following propositions which had been submitted to them by the committee appointed by the Canadian Medical Association last year, and had approved of them in their entirety:

"I. Matriculation—The schedule of subjects shall comprise: 1. English language, including grammar, composition and writing from dictation; 2. arithmetic, including vulgar and decimal fractions, and

the extraction of the square root; 3. algebra, to the end of the simple equations; 4. geometry, Euclid, books 1, 2 and 3, with easy deductions; 5, Latin grammar, translation from specified authors, or of easy passages not taken from such authors; 6, Elementary mechanics of solids and fluids, comprising the elements of statics, dynamics, hydrostatics and elementary chemistry; 7, History of England and Canada, with questions in modern geography; 8, and any one of the three following subjects: French, Greek and German, the requirements being the same as in Latin.

"Fifty per cent. of the marks in every subject shall be necessary for a pass, and 75 per cent. for honours.

"In lieu of the above will be accepted a degree in arts of any university in Her Majesty's dominions, or from any college or university that may hereafter be recognised, but no matriculation in arts in any university will be accepted.

II. Professional education—(a) The curriculum of professional studies shall begin after the passing of the matriculation examination, and shall comprise a graded course in the regulation branches of four yearly sessions of not less than eight months of actual attendance on lectures in each year. (b) The subjects to be anatomy, physiology, chemistry, pharmacy, surgery and clinical surgery, medicine and clinical medicine, including diseases of eye, ear, throat and nose, mental diseases, obstetrics, diseases of women and children, medical jurisprudence, toxicology, hygiene, pathology, including bacteriology.

"(c) That at least twenty-four months out of the graded four years, eight months each, be required for attendance on hospital practice, to begin with the second year of study. (d.) That proof of attendance on not less than six cases of obstetrics be required.

"III. Examination—All candidates for registration in the various provinces, in addition to having fulfilled the foregoing requirements, shall be required to undergo examination before examiners, to be appointed in each of the provinces by their respective councils, or by means of assessors, as in the province of Quebec, or by delegating their authority to one central body, as has been done in Manitoba. Such examination shall comprise all the subjects of professional study, shall be both written and oral, and 50 per cent. of the marks shall be required in every subject for a pass."

This announcement by Dr. Walker was received by loud applause. On Dr. Beausoleil making a similar statement for the Province of Quebec, the cheering broke out again.

Dr. PYNE, of Toronto, speaking for the Ontario Medical Council, stated that the question had not been specially discussed by them. In

their charter they had a clause providing for reciprocal registration with such provinces as should appoint a central examining board and exact a sufficiently high standard. From this stand they could not depart.

Dr. THORNTON, the President of the Manitoba Medical Council, regretted the position taken by Ontario. It implied that the question of Interprovincial Registration was no nearer to a solution than it had been at the meeting last year. The clause about Reciprocal Registration appeared in the Manitoba Act, but the matter had been carefully discussed by the Council and he had been instructed to state that they approved of the scheme as laid down by last year's Committee. The Manitoba doctors had gone to a great deal of trouble in the matter, and he felt that if some action was not taken this year, it would be some years before they could be induced to take it up again.

Dr. MCLEOD, of Charlottetown, said that Prince Edward Island had taken the same course as Manitoba and he had been sent as their representative to say that they approved of the scheme. They particularly desired that the matter should be pushed through at this meeting and definitely settled.

The meeting then adjourned until the following morning.

As soon as the President had taken the chair, Dr. Walker presented the following report from the Committee on Interprovincial Registration, and moved that it be adopted :

"The committee beg leave to report that the Medical Councils of Quebec, Prince Edward Island, Nova Scotia, New Brunswick and Manitoba have signified, by resolution, their approval of the resolutions of the committee of 1896, and have accepted them as a basis of agreement for interprovincial registration.

We, therefore, recommend that the matter be referred to the councils mentioned to formulate an agreement and to carry it into effect.

(Signed)

D. MARSIL,
C. S. PARKE,
H. CHOLETTE,
J. M. BEAUSOLEIL, Quebec.
G. E. COULTHARD,
THOMAS WALKER,
JAMES CHRISTIE, New Brunswick.
EDWARD FARRELL,
W. S. MUIR, Nova Scotia.
JAMES MCLEOD,
JAMES WARBURTON, Prince Edward Island.
R. S. THORNTON, Manitoba.

In the discussion which followed, it was stated that all the provinces except Ontario had accepted the proposed basis for reciprocity in registration. The representatives from Ontario stated that according to their charter they could not have interprovincial registration with a province which had not a central examining board, and that they did not wish to go to the legislature for fear that the Act should be repealed and the profession given no protection at all. It was pointed out that at the time that the Dominion was formed all the provinces had not come in. It was to be hoped that, as in the case of the provinces confederating so in this matter, that the other provinces would follow until finally all were in line.

The report was then adopted without any dissent.

The report of the nominating committee was then presented and was unanimously adopted.

President—Dr. J. M. Beausoleil, Montreal.

Vice-Presidents—Prince Edward Island, R. McNeill, Stanley Bridge; Nova Scotia, R. A. McKeen, Glace Bay; New Brunswick, P. R. Inches, St. John; Quebec, C. S. Parke, Quebec; Ontario, A. McPhedran, Toronto; Manitoba, J. R. Jones, Winnipeg; N.W.T., F. C. Mewburn, Lethbridge; British Columbia, S. Tunstell, Vancouver.

Local secretaries—Prince Edward Island, P. McLaren; Nova Scotia, James Ross, Halifax: New Brunswick, H. Lunan, Campbellton; Quebec, Dr. Marois, Quebec; Ontario, Dr. Eclan, Ottawa; Manitoba, W. J. Neilson, Winnipeg; N.W.T., Geo. Macdonald, Calgary; British Columbia, B. F. Boyce, Kelowa.

General Secretary—F. N. G. Starr, Toronto.

Treasurer—E. B. Small Ottawa.

Next place of meeting, Quebec.

It was moved by Dr. REEVE, seconded by Dr. MCPHEDRAN, that the ex-Presidents compose a committee on By-laws.

The auditors, Dr. Shaw, Hamilton, and Dr. Maeder, Halifax, then presented their report, which was unanimously adopted. It was a satisfaction to learn that the finances are in a flourishing condition.

The proceedings then closed with the usual votes of thanks.

CLINIC AT THE MONTREAL GENERAL HOSPITAL.

This was held in the Surgical Theatre on Monday, August 30th.

Dr. BLACKADER, while regretting that at this season of the year the beds in the medical side of the hospital were chiefly occupied by patients with typhoid fever, thought that perhaps a few words on the treatment of this everywhere prevalent disease might not be without interest to Members of the Association. For the past four years,

he said, almost all the patients in the hospital have been treated according to the Brand method. In accordance with this the patient, as soon as his temperature reaches 102½, is placed in a bath of a temperature of 80° F. which is rapidly cooled down to 70 or 68° F. While lying in the bath friction is applied to the limbs and cold to the head; the patient remains in the bath from 10 to 15 minutes. Should the bath be followed by any appearance of cyanosis, and reaction be slow, the patient is given a small quantity of stimulant either before or after the bath; the baths are repeated every three hours if necessary. Should the case appear to demand it, stimulants are given in moderation, from four to eight ounces of spirits daily, while strychnine and digatalis are used as occasion may require. Under this plan, the extreme typhoid state with muttering delirium, and subsultus tendinum that used to be met with under the old plan of treatment is now rarely seen. In the few extreme cases in which delirium sets in with much vaso-motor depression, a small dose of hyoscine hydrobromate will frequently be found to secure sleep. Out of 93 cases treated in the hospital last summer there were seven deaths, three of which were due to perforation. During the present year 54 cases have been treated with four deaths, two of which were due to perforation. This percentage is a decided improvement on the former record of this hospital. In closing his remarks on the treatment of typhoid fever, Dr. Blackader referred to the brilliant record which appears in the Annual Report of the Royal Victoria Hospital.

In this Hospital during the year 1896, 62 cases of typhoid were admitted; of these 60 were treated to a conclusion without one death; two were removed to their homes before complete convalescence, but both of these made a satisfactory recovery. Of these 62 cases many were of a grave type. This is a record of which the medical profession everywhere may justly be proud.

Dr. Blackader then showed three cases of cerebral hæmorrhage in children, all of them of the acute acquired type. He said that he had hoped to have present two or three other children illustrating the more common form of palsy met with in children, namely that occurring at birth. A third form is sometimes seen, truly congenital and due to defect in development. The etiology of birth palsy is sufficiently evident, being due to undue pressure causing rupture of some of the small meningeal vessels and hæmorrhage. The etiology of the acute acquired cases is more obscure. The onset is generally associated with an attack of convulsions and it has been a matter of discussion whether these convulsions should be regarded as the existing cause or as a mere symptom. As a fact these cases are frequently

met with as a sequela to many of the acute infectious diseases. The reason for this sequence is not exactly known but has been attributed to a fatty degeneration of the cerebral arteries due directly to the action in the blood of the specific toxines of these diseases. In those cases where the patient has been much debilitated by severe illness, the formation of a thrombosis in the superior longitudinal sinus may also favour the production of hæmorrhage. Strumpell on the other hand believes that many of these cases are due to an acute polio-encephalitis, an affection closely resembling the more common acute polio-myelitis.

In case No. 1, we have an instance of a severe cerebral hæmorrhage occurring in a child of four years. In the history of the patient, we note that he was supposed to have suffered from scarlet fever one year ago and from a subsequent nephritis. From them he apparently quite recovered as the urine shows no trace of disease. Before the hæmorrhage occurred he is described as a bright intelligent child of a fair size for his age and able to speak fairly distinctly.

At the beginning of this year the parents state that he appeared to suffer from headache and his nights were restless. He had two slight convulsive attacks previous to the one that ended so disastrously; this took place six weeks ago, lasted three hours and was only relieved by chloroform. The child remained unconscious for over a week, simply swallowing a little nourishment when placed on the tongue. As the child recovered, complete paralysis on the right side was noticed. He was brought to the hospital three weeks ago.

It is noted that the child was fairly well nourished but anæmic, was of good muscular development, that he was unable to speak, and appeared to understand little that was said to him, although he appeared to take an interest in all that was going on about him: There was distinct evidence of right-sided paralysis of the muscles of the face The right arm was motionless, the forearm flexed upon the arm in a position of pronation, the hand flexed at the wrist, the fingers bent into the palm of the hand, the thumb alone in a position of extension and adduction. The right leg lies motionless and semi-flexed with the foot partially extended. The right patellar reflex is exaggerated but there is no ankle clonus. The pupils are equal and react normally. Sensation so far as can be ascertained is unimpaired; there is no incontinence of urine. The respiratory and vascular systems show nothing abnormal. The notable point in his case is the aphasia. In adults this is almost invariably met with in connection with paralysis on the right side, but in children it is occasionally met with also in left hemiplegia. Of much importance in these

cases are the rigidities or contractures which regularly accompany the paralysis; they occur early and are developed much more easily than in the cerebral palsies of adult life. The prognosis in a severe case like this should be most guarded, if signs of improvement set in in a few weeks, we may be somewhat hopeful, but if weeks and months pass, the probability for improvement becomes lessened. While we have in these cases little or no atrophy of the muscles except what may be accounted for by disuse, the affected limb generally remains stunted, and later on athetoid movements may develop. In many of these cases also, epilepsy forms an important sequence. The mental condition is also a source of anxiety; in from 30 to 50 per cent. of cases distinct signs of mental impairment are noticeable. Frequently symptoms of secondary degeneration make their appearance in the portions of the brain surrounding the lesion. With regard to treatment there is little to be said; of most importance is the care of the contractures which require the application of splints to prevent deformity.

In the second case we have an instance of hemiplegia due to embolism and associated with rheumatic endocarditis. The age of this patient is 10 years. We note that he had an attack of scarlet fever at six years of age, followed by acute rheumatism with involvement of the heart. Towards the end of last June he was taken ill with what was said to have been acute rheumatism. After 15 days illness he was seized suddenly in the early morning with clonic contractions of the left side of the body. On their subsidence paralysis of the left side was noted. At present he is a bright looking lad of fair intelligence with a slight paretic condition of the left side of the face, and marked loss of power in the left upper and lower extremity. There is some contracture of the fingers of the left hand, the reflexes on left side are distinctly increased, and patellar clonus may be elicited on this side. Tactile sensation is apparently normal on both sides as is also the sensation of heat and cold; the respiratory system is normal; a loud blowing systolic murmur is heard at the apex of the heart which is palpable $3\frac{3}{4}$ inches to the left of the left margin of the sternum.

The third case, for which I am indebted to the kindness of Dr. Stewart of the Royal Victoria Hospital, is one of monoplegia in a child of seven years. Originally a hemiplegia, the paralysis has passed away so far as the lower limb is concerned, and the upper limb alone remains affected. This is the usual course of events.

Dr. FINLEY presented a case of chronic lead poisoning in which paralysis of the muscles supplied by the external popliteal nerve was

present, although the extensors of the wrist and the small hand muscles were free. The patient was a man of about 30, employed in a rubber factory. Paralysis was noted about a year previously. Colic had been present but never severe. On first coming under observation there had been a well-marked lead line on the gums. There was double foot drop, steppage gait, atrophy and paralysis of the muscles of the lower leg. Both the faradic and galvanic irritability of muscles and nerves were lost.

Attention was drawn to the rarity of paralysis of the legs without involvement of the arms in the adult, although such a distribution was the rule in children.

Dr. FINLEY also showed a case of myopathic muscular atrophy. The patient, a male, æt 30, had noted weakness and pains in the muscles of the shoulder and thighs, beginning about five years previously. No other case of muscular atrophy was known in the family.

The spinati, deltoid, serratus magnus, pectoralis major and triceps showed a high degree of atrophy, also the buttock and quadriceps extensor of the legs. The abdomen was protuberant from weakness of the abdominal muscles. There was no fibrillary twitching and the face was free. The muscles responded to galvanism and faradism.

The type corresponded with Erb's juvenile form.

Dr. G. GORDON CAMPBELL brought forward a case of sporadic cretinism in a little girl, 3 years of age.

Dr. KIRKPATRICK showed a young woman on whom he had operated for perforated gastric ulcer last March. The operation had been performed four hours after the rupture had occurred. A median incision was made and the site of the rupture was found, without much difficulty, on the anterior wall of the stomach, four inches from the cardiac orifice and nearer to the lesser than the greater curvature. The opening was closed by a double layer of Lembert sutures, the peritoneal cavity cleaned by sponging with gauze pads, and the abdomen closed, a rubber drain being inserted down to the site of the perforation. A small opening was made just above the pubes and a glass drain inserted into the pelvis. A culture from the fluid in the peritoneal cavity proved sterile. The rubber drain was removed in twelve and the glass drain in twenty-four hours. Stomach feeding was commenced in twenty-four hours by giving small quantities of milk and lime water every hour. The patient was discharged in thirty-five days, quite well.

The diagnosis of perforated gastric ulcer had been based on the suddenness and severity of the attack, the abdominal tenderness with

the point of greatest intensity over the stomach, and a somewhat indefinite history of gastric disturbance and failing health.

Dr. SHEPHERD showed the following cases :

I. Colotomy after Maydl's method performed on a woman five years before for extensive syphilitic stricture of the rectum ; patient was in good health, but had several fistulæ about the artificial anus.

II. Case of excision of the lower jaw in a man aged 60, for carcinoma ; operation performed July 23rd. Dr. Shepherd stated that in all his cases of operations on mouth, jaws, neck and head, it was his endeavour to get the patient up as soon as possible, usually the day after operation ; he also in summer made them go out into the sunshine.

III. Case of excision of right upper maxilla in a woman aged 65 ; operation performed last February, no sign of recurrence.

IV. Cystic tumour of frontal sinus and orbit. A large opening could be felt in the frontal bone and communicated fluctuations between the orbit and projection on forehead ; the eye was displaced downward. Tumour first noticed 18 months before but she says her eye has been slightly displaced for 5 or 6 years. When admitted the cyst was tapped and a dark coloured fluid evacuated, the tumour disappeared but the eye remained the same, three fingers could be inserted in the opening in the frontal bone. The cyst rapidly refilled.

V. Dislocation of knee in a man aged 58. The displacement had been outwards and backwards and was due to the kick of a steer whilst loading cattle on a steamship ; the displacement was easily reduced and now he was able to walk about.

VI. A case of complete excision of thyroid gland, for large growth ; patient, a woman æt 50, was operated on in June, and was dismissed, cured ten days later ; the whole gland was removed because it was in a state of general cystic degeneration and no part of it could be left Patient recovered rapidly, and as yet had developed no signs of myxœdema, perhaps there was a para-thyroid.

VII. Bullet wound of head. This was a case of attempted murder where the bullet entered the mastoid process, passed through part of temporal bone and, severing the facial nerve in the aquaductus Fallopii, and passing behind the styloid process and between the external and internal carotid, entered the mouth and knocked out a molar on the opposite side. An attempt was made to unite the ends of the nerve but there was so much destruction that the proximal ends could not be reached in the bone. This man also had a bullet wound through the chest, received at the same time.

VIII. A man aged 28, from whom had been removed last January

eight feet of small intestine and a large mesenteric tumour weighing 13 lbs. The patient when exhibited was in robust health and attending to his business as usual. The bowel had been united by primary suture. The tumour and removed intestines were also exhibited. Dr. Shepherd remarked that this was the second longest piece of intestine removed with recovery of the patient, and the longest ever successfully removed with a tumour.

Dr. G. E. ARMSTRONG showed a man aged about fifty years upon whom he had operated for cancer of the rectum situated high up. The operation was performed 18 months before. At the time the man was weak, thin and very anæmic. The disease was high up and involved the mucous membrane on the anterior wall of the rectum as well as the posterior.

The method of Heinecke was adopted, *i. e.*, osteo-plastic flaps were raised. The sacrum and coccyx were divided in the median line up to the level of the third sacral foraminæ and then transversely. When they were reflected perfect access was obtained. A sound was introduced through the urethra to facilitate the removal of the growth from the region of the prostate. When this was accomplished, the peritoneum was incised and the rectum carefully separated and drawn down as far as thought necessary, care being taken not to divide any of the meso-rectal vessels above the point selected for the division of the gut. The peritoneum was then carefully stitched to the anterior wall of the rectum and the peritoneal cavity closed before the gut was divided. In this case Dr. Armstrong had performed a left inguinal colotomy two weeks prior to the resection of the rectum. The wound being free from fæces healed kindly, and the man is now in very good health and quite active. There is no sign of recurrence.

Dr. ARMSTRONG also showed a little girl aged 14 years, upon whom he had operated for appendicitis in the acute stage. Ten days after the first operation, a tender, painful mass developed to the left of the incision. This complication was accompanied by rise of temperature. An incision was made over this mass and a small abscess found in the stump of the mesentery. The mesentery at the time of the first operation was found forming part of the abscess wall and all the apparently infected portion had been tied off. Evidently some infected corner had escaped and given rise to the secondary abscess. Second operations are as a rule unsatisfactory but this is an exception, as you see the girl is now quite well.

Dr. HUTCHISON showed first a compound fracture of the jaw, in which the bone had been broken in two places. By means of an interdental splint, fitted by Dr. J. S. Ibbotson, an excellent result had

been obtained. A case of talipes varus came next, in which excision of the astragalus had remedied the deformity. A successful operation for ununited fracture of the femur, in which the first operation had failed owing to the wire breaking, was then exhibited.

An interesting case of keloids on the chest and arm was viewed with interest, as was also a child, two and a half years of age, on whom a successful operation for appendicitis had been performed.

Cases exhibited by Dr. C. W. WILSON:

I. Annie M., æt 17, case of acute, painful flat foot, three months duration, rapidly becoming worse, deformity increasing; characteristic symptoms, tracings and carbon impressions shown. Treatment; twisting the feet up into extreme inversion and dorsal flexion, encasing in this position in plaster of paris. This requires an anæsthetic usually. After two weeks, removing the plaster of paris case and casts of the feet then made by Whitman's method, cast reproduced in iron, and the steel plate hammered upon it, and cut in the later Whitman shape, applied to the feet and inserted into the boots. This was done ten days ago. The patient was discharged three days after application and now walks as nearly perfectly as possible, with no pain, nor inconvenience. It is to be expected that the foot will be a little weak after coming out of the plaster, but the rest in the corrected position effects complete (or nearly so) resolution of the inflamed joint surfaces and peri-arthritic tissues, this inflammation being due to traumatism or mechanical injury, from joint surfaces not being in their proper relation, and stretching of ligaments and soft parts, also from the deformity.

II. Robert M., æt 52, chronic persistent flat foot, marked deformity. Abduction of oscalcis 45°, and marked eversion of both feet, tracings and carbon prints shown; pain, swelling and great tenderness. This case has been stretched and put up in plaster, the adhesions tearing like the breaking of a bundle of fagots, the feet over-corrected, left for three weeks, taken down and casts made. I usually apply the old cut down cases, after making the casts, and exercise the foot twice a day in all directions to tone up the muscles while waiting for the plates. These have in this short time relapsed to the extent you see, and I shall make an angle arm from this plate, and a leg upright with calf bands to control this foot, of course providing a joint at the ankle, and the elevated arch to the plate as in the Whitman plate.

III. Blanche L., æt 12. Apparatus for extension in the line of deformity in hip joint disease. Bradford steel frame, with canvas coverings and inclined plane, adjustable, to be attached to it. Perineal bands and pads attached to an arm from the side bars, other ends to the head cross bar. Raise the diseased leg until the lordosis is oblit-

erated and fix incline at that point, put on traction by weight and pulley and you will find that the muscles will relax and it can be let down from one to two inches a day until the hip is again 180°. It provides also for the lifting of the child about without disturbance of its position. Can be carried out bodily and placed on chairs in the open air, etc.

IV. Eva C., æt 10. Similar hip joint disease, old standing. Marked deformity, 90° in Thomas' position (the only reliable method of measuring). On traction incline and frame two weeks, now down to 145°. The goniometer is used for indicating these angles.

V. Jemima L., æt 8. Bradford frame, with head extension and upright for spinal cases. Potts disease, etc., with traction from the hips, by pelvic band, above trochanters, laced on and side webbing with cross bar at the feet, and weight and pulley. This frame can also be carried about anywhere with the patient upon it, and the functions of bowels and bladder performed without disturbance of the patient. This child has had paraplegic symptoms, hence use of extension in recumbent dorsal position.

VI. Maria Mc., æt 9. One of those totally paraplegic cases. This child was treated in recumbent position for some six months. Had lost all control of bladder and bowels and was unable to move a muscle of the lower extremities, had increased knee jerk, and marked ankle clonus. Potassium Iodide was also given in large doses, 35 gr. t.i.d., and increased above that amount even. Rapidly improved, plaster of paris jacket and Sayer's jury-mast applied later. Discharged from hospital when walking well. Now "can outrun any child on the block" and has got quite fat and looks very well. Will remove jacket and head spring in six months probably. Her treatment will then extend over two years, and I expect perfect cure with smallest possible deformity.

The other children are not wearing any artificial support at present and are also in as good condition as this child. They were treated similarly, recumbency, plaster of paris jacket and corset.

The Smoking Concert.

This was held on Monday evening, in the Masonic Hall, and was a pronounced success. The programme was contributed by a number of well known amateurs and was a lengthy one. Among those who contributed were Drs. Max Lauterman, H. Robertson, Jehin Prume, Pelletier and Sheridan; Messrs. Wilkes, Parker, Rose, Hickey and Anderson.

A poem, written by Dr. W. H. Drummond for the occasion, and entitled "Ole Docteur Fiset," was read by Dr. C. W. Wilson, and was received with loud applause.

"OLE DOCTEUR FISET."

BY

W. H. DRUMMOND, M.D.

Ole Docteur Fiset, of Saint Anicet,
Sapré tonnerre, he was leev' long tam !
I'm sure he's got ninety year or so
Beat all on de parish, 'cept Pierre Courteau,
An' day affer day he work all de sam' !

Dat house on the hill you can see it still,
She's same place he buil' de firse tam he come ;
Behin' it dere's one leetle small jardin ;
Got plaintee de bes' tabac Canayen,
Wit' fameuse apple and beeg blue plum.

An dey're all right dere, for de small boy's scare
No matter de apple look nice an' red,
For de small boy know if he's stealin' some
Den Docteur Fiset on dark night he come,
An' cut leetle feller right off hees head.

But w'en dey was rap, an' tak' off de cap,
M'sieu' le Docteur he will say "Entrez,"
Den all de boys pass on jardin behin',
W'ere dey eat mos' ev'ryting good dey fin'
Till dey can't go on school nearly two, t'ree day—

But Docteur Fiset, not moche fonne he get
Drivin' all over de whole contree,
If de road she's bad, if de road she's good,
W'en everyting's drown on the spring-tam' flood,
An' workin' for noting, half-tam, maybe.

Let her rain or snow, all he want to know
Is jus' if anywan's feelin' sick,
For Docteur Fiset's de ole fashion kin',
Doin' good was de only ting on hees min',
So he got no use for de politique.

An' he's careful, too, 'cause firse ting he do,
For fear dere was danger some fever case
Is tak' w'en he's come leetle w'isky chaud,
Den noder wan too, jus' before he go
He's so scare carry fever aroun' de place.

On nice summer day, w'en we're makin' hay,
Dere's not'ing more pleasant for us, I'm sure
Dan see de ole man come joggin' along,
Alway singin' some leetle song,
An' hear heem say, "Tiens, mes amis, Bonjour."

An' w'en de cole rain was commence again
An' we're sittin' at home on some warm cornerre
If we hear de buggy an' see de light
Tearin' along t'roo de black, black night,
We know right off dat's de ole Docteur ;

An' he's smart horse sure, w'at he call "Faubourg,"
Ev'ry place on de Parish he know dem all,
An, you ought to see de nice way he go
For fear he's upsettin' upon de snow,
W'en ole man's asleep on de Cariole ;

I 'member w'en poor Hormisdas Couture
Get sick on hees place twenty mile away,
An' hees boy Ovide he was come raquette,
W'at you call Snowshoe, for Docteur Fiset,
An' Docteur he start wit' hees horse an' sleigh.

All de night before, de beeg storm she roar.
An' mos' of de day, it's de sam' also
De drif' was pilin' up ten feet high,
You can't see not'ing dis side de sky,
Not'ing but wan avalanche of snow.

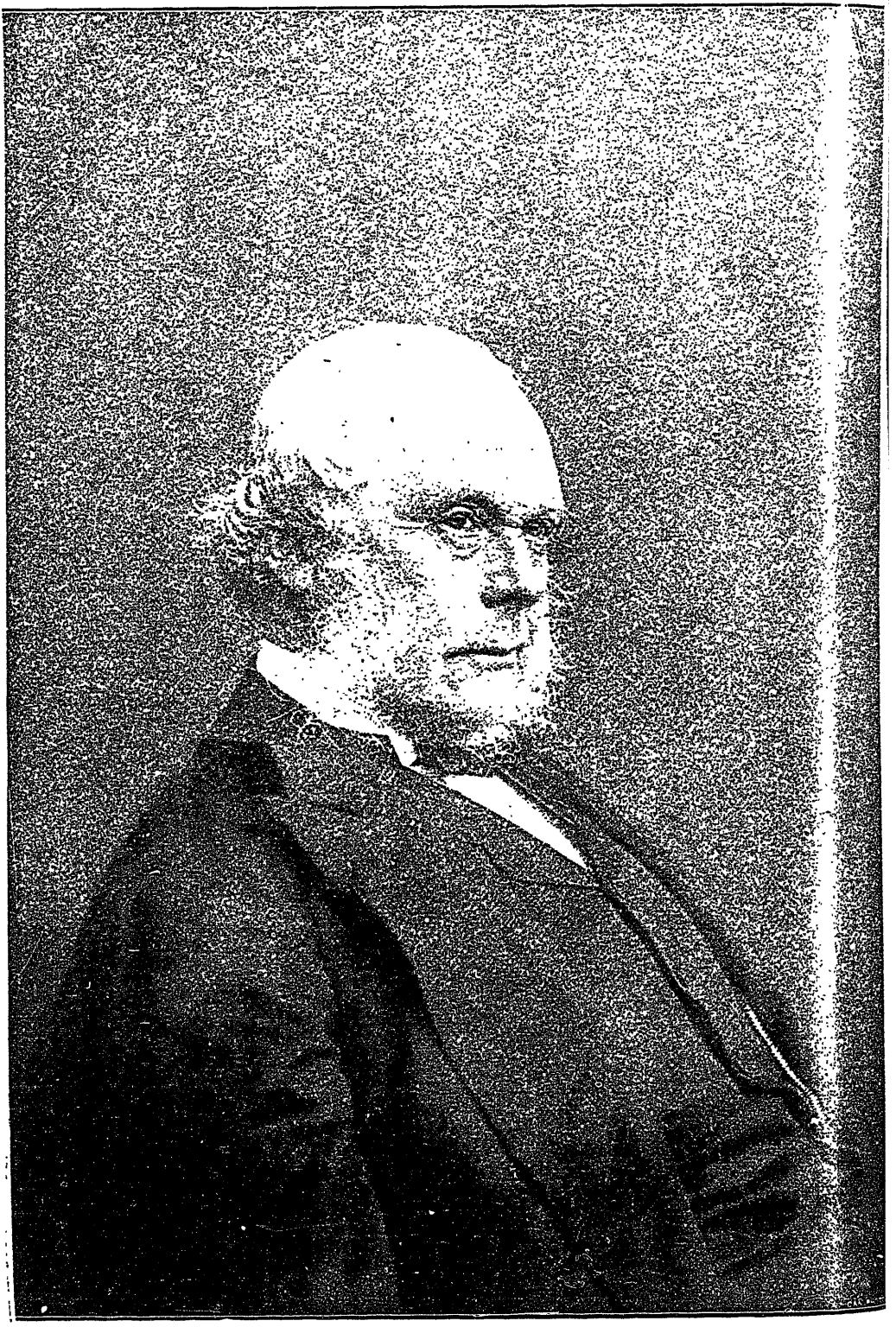
I'm hearin' de bell w'en I go on de well
For water de cattle on barn close by,
But I only ketch sight of hees cheval blanc,
An' hees coonskin coat wit' de capuchon,
An' de storm tak' heem off jus' de sam' he fly.

Mus' be le bon Dieu dat is help him t'roo
Ole Docteur Fiset an' his horse "Faubourg,"
'Twas someting for splain-me, wall, I don't care,
But somehow or 'noder he's gettin dere,
An' save de life Hormidas Couture !

But it's sam' alway, lak' dat ev'ry day,
He never was spare hese'f pour nous autres,
He don't mak' moche monee Docteur Fiset,
An' offen de only t'ing he was get
Is de prayer of poor man, an' wan bag of oat.

* * * * * * * *

Wall ; Docteur Fiset, of Saint Anicet,
He is not dead yet, an' I'm purty sure
If you're passin' dat place about ten year more,
You will see heem go roun' lak' he go before,
Wit' de ole cariole an' hees horse "Faubourg !"



LORD LISTER.

THE

Montreal Medical Journal.

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BRITISH MEDICAL ASSOCIATION.

The first colonial meeting of the British Medical Association is now a thing of the past, but its memory will long remain with those who took part in it. It has passed off with the greatest success possible and everyone has thoroughly enjoyed it. From the opening of the meeting with the church service in the Anglican Cathedral to the closing of the festivities with the reception at McGill University on Friday night, no hitch occurred, but everything passed off with the greatest pleasantness and unanimity. The preacher at the church service was the Rt. Rev. Dr. Dumoulin, Lord Bishop of Niagara, who took for his text "How God anointed Jesus of Nazareth with the Holy Ghost and with power: who went about doing good and healing all that were oppressed of the devil; for God was with Him."—Acts, 10th chapter and 38th verse. The opening sentences dealt with the notable gathering in London this year to take part in one of the most remarkable events in the history of the nation. He spoke at length of the medical profession, comparing its work only with that of the Church. It was a sermon that was listened to with rapt attention throughout. The offertory taken up afterwards was in aid of medical charities.

In the afternoon the opening ceremonies of the meeting took place in the Windsor Hall. The visitors were welcomed by the Mayor on behalf of the citizens of Montreal, by Sir Adolphe Chapleau, the Lieut.-Governor, as representing the Province of Quebec, and by His Excellency the Governor-General, on behalf of the Dominion. The chair at this meeting was taken by the President of the Council, Dr. Robt. Saundby, of Birmingham. He was supported by the officers of the Association. On the platform were also Lord Aberdeen, the

Governor-General of Canada, Sir Adolphe Chapleau, Lord Lister, Lord Strathcona and Mount Royal, and Mayor R. Wilson-Smith.

After the addresses of welcome, the delegates were introduced by Dr. Adami to the President and to the Governor-General.

Dr. O'Donnell said, before leaving Winnipeg he was commissioned by the Premier of Manitoba to invite the Association to hold their next year's meeting, or some meeting in the near future, in the city of Winnipeg. He was aware that, as this was the first meeting held outside the United Kingdom, the request might seem a little presumptuous. It was true that thirty years ago Winnipeg was only an outpost of civilization, but it was now a flourishing city of fifty thousand inhabitants, situated precisely in the centre of British North America and of the North American Continent.

Dr. Saundby thanked Dr. O'Donnell for the invitation, and said the Council in London would be very glad to take the matter into consideration.

Dr. Roddick, the President of the Association, then delivered his inaugural address (see page 161, September number).

In moving a vote of thanks to Dr. Roddick for his valuable and eloquent address, Lord Lister remarked that he could testify from personal experience to the value of one of the health resorts which had been referred to. He had spent three days in the Muskoka region, and never had he seen a more lovely country nor could he conceive of a more healthful district. He confirmed what Dr. Roddick had said regarding the progress which has been made in Canada in medical education and legislation. The question of medical legislation is an extremely difficult one, and he thought that the same system which prevailed in England would be found to work well in Canada.

Sir James Grant, of Ottawa, seconded the resolution in an eloquent and patriotic address, and it was carried by acclamation.

Dr. Saundby conveyed the thanks of the Association to the Governor-General, the Lieut.-Governor, and the Mayor for their presence. This terminated the first day's proceedings, the rest of the day being given up to the entertainment of the members. It would take too long to detail the arrangements which had been made with this end in view, suffice it to say that every moment of the week was kept fully occupied, either by the sectional work and the general addresses of the Association, or else by the garden parties and other entertainments tendered by the city and the citizens of Montreal.

A pleasing function was the dinner tendered to Lord Lister by the Montreal Medico-Chirurgical Society. This took place on the Tues-

day evening, and at a later hour there was a soiree at Laval University, at which Professor Chas. Richet delivered an address on the work of Pasteur and the modern conception of medicine.

The annual dinner of the Association took place on Thursday evening at the Windsor Hotel and was a distinct success, the number sitting down being considerably over 400.

The arrangements of the Excursion Sub-Committee formed one of the attractions, on the social side, which were much appreciated by the members of the Association and their guests. On Tuesday ten of the large open cars of the Montreal Street Railway were placed at the disposal of those who cared to see something of the city and its environs. Judging from the way the cars were filled up, this trip was a decided success.

On Wednesday and Friday, after the public meetings, special trains were provided to take members and guests to Lachine, where the steamer Sovereign, with a band on board, was waiting to take them down through the Lachine Rapids. About eleven hundred took in this trip, and one and all enjoyed its beauty. These excursions were given free.

The city and medical profession of Ottawa having extended an invitation to the members to visit Ottawa, the Executive decided to contribute towards the success of this trip by providing a special train made up of five chair cars and one Pullman. The run up was made in a little over two hours and a half. Arriving at the capital entertainment was provided in the shape of electric railway rides, a lacrosse match and a sumptuous luncheon at the Russell House. His Worship the Mayor of Ottawa honoured the guests by being present and succeeded in making every one feel quite at home. Other Saturday excursions were arranged for, one to Lake Saranac and one to Lake Memphremagog. The latter was not patronised to the extent that the attractions of the lake would seem to have merited.

THE ANNUAL MUSEUM.

We will publish a full description of this in our next number.

JUBILEE NURSES' HOME.

LORD LISTER AT THE MONTREAL GENERAL HOSPITAL.

Thursday, September 2nd, 1897, was a red letter day in the history of the Montreal General Hospital, for on that day the foundation stone of the only Jubilee work in Montreal was laid by Lord Lister. As we noticed a short time ago, the Governors of the Society of the Montreal General Hospital had, on the strength of a report from the

President and Committee, decided to commence this work at once, and accordingly the ground was broken in the latter part of June. In order to add to the interest which already is manifested in this venerable institution, advantage was taken of the presence in the city of Lord Lister, who was asked and consented to lay the corner stone.

After Dr. Barclay had opened the proceedings with prayer, the President, Mr. F. Wolferstan Thomas, briefly sketched the progress of the hospital since its foundation in 1822. He was followed by His Excellency the Governor-General, who spoke upon the disinterested and noble character of the nursing profession. In conclusion he expressed his cordial good wishes for the success of the undertaking.

In laying the stone Lord Lister spoke of the great advantage which medical schools are to hospitals in stimulating the medical officers to a proper appreciation of the importance and nobility of their calling.

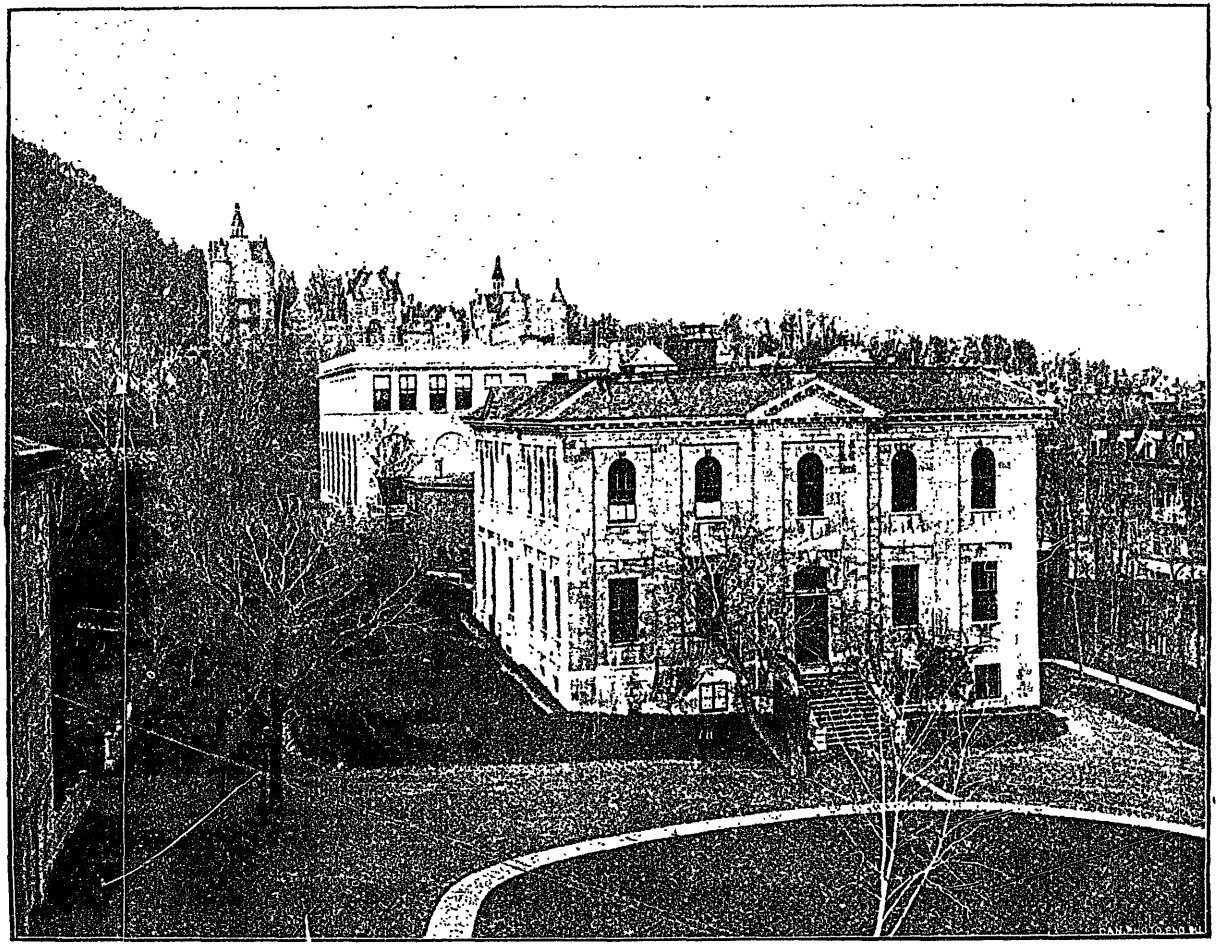
Lord Mount Royal briefly spoke on the benefits which hospitals conferred upon the public and paid a graceful tribute to the President of the institution in referring to the good work he had accomplished. Mayor Wilson-Smith extended congratulations upon the establishment of the Jubilee Nurses' Home. Dr. Roddick being called upon, made a few remarks on the progress which had been made in the profession of nursing in Canada. He called attention to the fact that the presence of Lord Lister on this occasion was very appropriate, because this hospital was the first in Canada in which the antiseptic principles, of which he was the author, were introduced.

One of the features of the occasion was the singing of the National Anthem by the nurses, who, attired in their becoming pink and white uniforms, occupied a platform in front of the building. Cheers were given for Her Majesty, the Governor-General, Lord Lister, Lord Mount Royal and others. The proceedings were brought to a close by the Bishop of Niagara pronouncing the Benediction.

McGILL MEDICAL LIBRARY.

During the past year several important additions have been made to the Library. Complete files of Virchow's Archives, the Deutsches Archiv für Klinische Medicin, and of the Zeitschrift für Klinische Medicin, have been purchased, and additions have also been made to the English and American journals, so that now the library offers for Bibliographical purposes a wide field for research. Although the catalogue is not yet complete, it is estimated that there are at least 15,000 volumes exclusive of duplicates.

The undergraduates of McGill Medical Faculty have presented their



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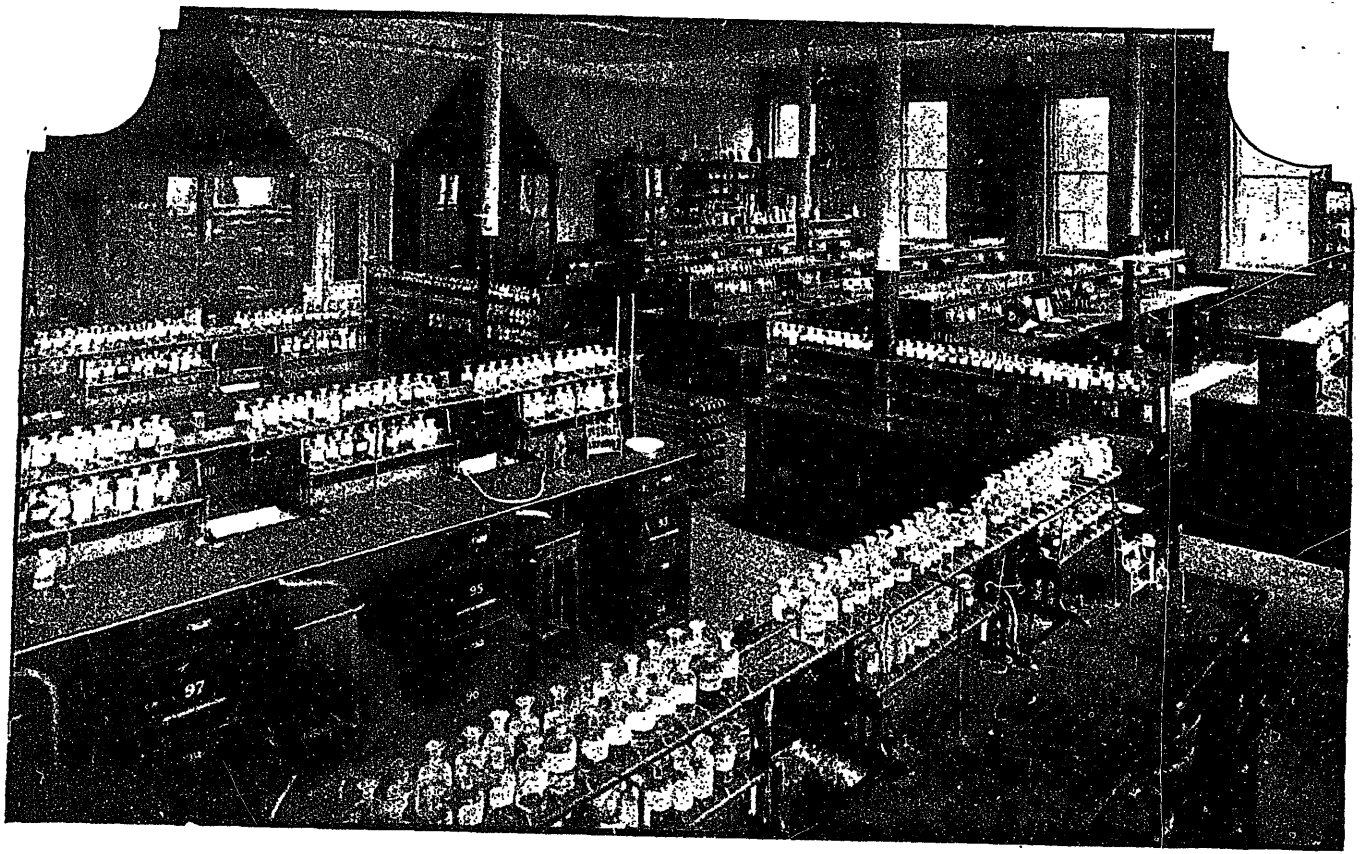

CHEMICAL LABORATORY, McGILL MEDICAL COLLEGE.

private library to the Library Committee, to form part of the Medical Library.

The thanks of the Faculty are due to Messrs. Henry Birks & Sons, for the gift of a handsome clock; also to Messrs. Henry Morgan & Co., for jardiniéres, and to Messrs. Tees & Co., for a revolving bookcase.

The number of volumes presented to the Library to June 31st, 1897, is..... 410
Those added by purchase..... 137

Total additions for the year..... 637

The total attendance, from June 2nd, 1896, to June 1st, 1897, has been 5,920
The attendance during the previous year was.... 4,875

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PRESENTED BY THE AUTHORS.

A. C. Abbott, M.D.—
Principles of Bacteriology, 1895.

D. Campbell Black, M.D., L.R.C.S., Ed.—
The Urine in Health and Disease and Urinary Analysis, 1895.

W. S. Colman, M.D., M.R.C.P.—
Section Cutting and Staining, 1896.

Carey Coombs, M.D.—
Galvanism in the Treatment of Neuritis and other Diseases, 1896.

Alexander Duncan, B.A., Lond.—
Memorials of the Faculty of Physicians and Surgeons of Glasgow, (1599-1850), 1896.

Max Einhorn, M.D.—
Diseases of the Stomach, 1896.

William Ewart, M.D., Cantab., F.R.C.P., Lond., M.R.C.S., Eng.—
Gout and Goutiness, 1896.

Ernest Finger, M.D.—
Die Syphilis und die Venerischen Krankheiten, 1896.

W. E. Fothergill, M.A., B.Sc., M.B., C.M.—
Manual of Midwifery, 1896.

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Royal Infirmary Cliniques, 1896.

M. L. Klein, M.D., Lond.—
Micro-organisms and Disease, 1896.

S. A. Knopf, M.D.—
Les Sanatoria Traitement et Prophylaxie de la Phtisie Pulmonaire, 1895.

J. H. Musser. M.D.—
Practical Treatise on Medical Diagnosis, 1896.

William Osler, M.D., F.R.C.P., Lond.—
Collected Reprints, 3rd Series (Jan. 1st, 1892, Jan. 1st, 1897).
Lectures on Angina Pectoris and Allied States, 1897.
Lectures on the Diagnosis of Abdominal Tumors, 1896.

Stephen Paget, M.A., Oxon., F.R.C.S.—
The Surgery of the Chest, 1896.

Robert Reid Rentoul, M.D., L.R.C.P., Ed., M.R.C.S., Lond.—
The Causes and Treatment of Abortion, 1889.

Sir William Roberts, M.D., F.R.S.—
Digestion and Diet with an Appendix on the Opium Habit in India 1897.

G. E. de Schweinitz, A.M., M.D.—
The Toxic Amblyopias, 1896.

H. Scurfield, M.D., Ed., D.Ph., Camb.—
Animal Tuberculoses and their Relations to Human Tuberculosis translated from the French of Ed. Nocard, 1895.

James Startin, M.D.—
Pharmacopœia for Diseases of the Skin, 1896.

Robert Saundby, M.D., Ed.—
Lectures on Renal and Urinary Diseases, 2nd Edition, 1896.

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Diphtheria and Antitoxin, 1897.

Otto A. Wall, M.D., Ph.G.—
The Prescription: Therapeutically, Pharmaceutically, Gramaticall and Historically Considered, 1890.

J. C. Webster, B.A., M.D., F.R.C.P., Ed.—
Selected Papers, 1895.
Ectopic Pregnancy, 1895.
Practical and Operative Gynæcology, 1896.
Die Ektopische Schwangerschaft, 1896.

H. M. Whelpley, M.D., Ph.G., F.R., M.L.—
Therapeutic Terms for Pharmacists and Physicians, 1894.
Chemical Lecture Notes, 1895.

J. Burney Yeo, M.D., F.R.C.P.—
Food in Health and Disease, 1896.

H. H. Sir Bhagvat Sinh Jee, Thakore Saheb of Gondal—
A Short History of Aryan Medical Science, 1896.

The library is also indebted to the following contributors:

Professor Adami—
Sajous Annual.
Manchester Medical Chronicle, 8 vols.
Gazette des Hopitaux, 1896.
Medical Directory, Lond., 1890.

Professor Armstrong—
Boston Medical Journal, 1896.

Boston Medical Library—
Guy's Hospital Reports, Vols. 16, 25.

Professor Blackader—
Materia Medica, Therapeutics and Pharmacology, by G. F. Butler, M.D., 1896.
Materia Medica and Pharmacology, by D. M. R. Culbreth, M.D., 1896.
International Medical Magazine, 1896.
Archives of Pediatrics, 1896.
Transactions of the American Pediatric Society, 1895.

Bristol Medical Library=

6 vols. of Brain., 9 vols. of the Annals of Surgery.

British Medical Association Library—

100 vols.

Dr. Philip P. Burrows—

System of Operative Surgery, 2 vols., by J. Bell, 1807-9.
Principles of Surgery, 2 vols., by J. Bell, 1815.
Lectures on the Ventilation of Buildings, by H. Ruttan, 1848.
Medical Regulations, 1859.
Destructive Art of Healing, by Dickson, 1856.
Whole Works of Dr. A. Pitcairn, 1740.

Professor J. C. Cameron—

American Journal of Obstetrics, 1896.
Munchener Medicinische Wochenschrift, 1896.
Lehrbuch der Geburtshülfe, by M. Runge, M.D., 1894.
Therapeutique Obstetricale, by A. Auvard, M.D., 1893.
Pathology of Childbed, by F. Winckel, M.D., 1876.
Practical Treatise on Urinary and Renal Diseases, by W. Roberts, M.D., 1885.
Medical Diagnosis, by J. M. DaCosta, M.D., 1884.
Diseases of Women, Vol. I., by L. Tait, M.D., 1889.
Manual of Obstetrics, by Dr. Dorland, 1896.
Manual of Pathological History, Vol. I. and II., by Carnil and Ranvier, translated by A. M. Hart, M.D., 1882-84.
British Gynæcological Journal, Vols. X. and XI.
Odd Journals.
Three vols. Medical Congress.

College of Physicians Phil.—

2 vols.

Hon. F. A. Crandall—

Surgeon-General's Index, 3 vols.

Edinburg University—

1 vol.

Editors of the Montreal Medical Journal—

Archives of Clinical Skiagraphy.

Dr. D. J. Evans—

Archiv. für Kinderheilkunde, 17 Bd., 1894, 18 Bd., Nos. 1-2.

Professor F. G. Finley—

Fortschritte der Med. Bds. 94-95.
Transactions of the Medical Society of the State of New York, 1892.
International Clinics, Vol. III., 1893.
La Semaine Medical, 1896.
Handbuch der Speciellen Pathologie und Therapie, Bds. I. to VII.
Influenza, by E. S. Thompson, 1890.
St. Thomas Hospital Reports, 1890.

Dr. G. M. Gould—

University Medical Magazine, Vol. I.
Medical News and Abstract, Vols. 38-39.
Medical News, Phil., Vols. 18 to 30.

Glasgow University—

1 vol.

Dr. James Kerr—

Photomicrographs of Normal Histology, Human and Comparative, 3 volumes, 1893.

Dr. R. C. Kirkpatrick—

Annals of Surgery, 1896.
American Academy of Railway Surgeons, Vols. I. and II.
Bulletin Medical.
Observations on Human and Comparative Parturition, by R. Bland, M,D., 1794.
Journals.

Dr. F. Lamarche—

Union Médicale.

Mr. L. E. Lawlor—

A System of Human Anatomy, by H. Cloquet, M.D., 1830.

W. J. C. Miller, B.A.—

Medical Register, 1896.
Dentists' Register, 1896, Lond.

McGill's Graduates' Society—

12 vols.

McGill's Medical Society of Undergraduates—

Lancet 1896.
Therapeutic Gazette 1896.
Popular Science 1896.

Dr. W. S. Morrow—

Experimented Physiology, by Martin, Lond., 175

Dr. A. S. Myrtle—

Journal of Balneology and Climatology.

New York Academy of Medicine—

Fortschritte der Med. Bds., 3 & 4 Journals.

New York State Board of Health—

2 vols.

Dr. T. D. Reed—

Materia Medica, by J. B. Biddle, M. D., 1892.

Royal College of Physicians—

4 vols.

Royal College of Surgeons—

20 vols.

Saint Thomas Hospital—

Reports, 1897.

Professor Shepherd—

New York Medical Record, 1896.
Maritime Medical News, 1896.
Canadian Practitioner, 1896.
Cutaneous and Genito-Urinary Diseases, 1896.
Canada Medical Record, 1896.
University Medical Magazine, 1896.
La Tribune Médicale, 1896.
Transactions of the First Pan-American Medical Congress, 1895, 3 vols.
Archives of Pediatrics, 1896.
Canadian Record of Science.
Case Books of R. L. MacDonnell, M.D., and Richard MacDonnell, M.D.
Transactions of the American Orthopedic Association, Vol. IX., 1896.
The Diary of a Resurrectionist (1811-1812) by J. B. Bailey, B.A., 1896.
Der Lustige Æsculap, by Von.
Dr. Peter Hilarius.

Smithsonian Institution—
3 vols.

State Board of Health, California—
10 vols.

State Board of Health, Illinois—
7 vols.

State Board of Health, Michigan—
4 vols.

Transactions of the American Climatological Association—
12 vols., 1896.

Transactions of the American Electro-Therapeutic Association—
3 vols., 1893-94-95.

Transactions of the American Laryngological Association, 1896.

Transactions of the American Ophthalmolgical Association, 1896.

Transactions of the American Orthopedic Association, 1896.

Transactions of the American Association of American Physicians—
Vol. XI., 1896.

Transactions of the Clinical Society of London—
Vol. XXIX., 1896.

Transactions of the College of Physicians, Phil.—
12 vols.

Transactions of the Medical Society of the State of New York—
38 vols.

Transactions of the New York State Medical Association—
12 vols.

Transactions of the Ohio State Medical Association.

Transactions of the Philadelphia Pathological Society
14 vols.

University College, Bristol—
1 vol.

University College, London—
10 vols.

Westminister Hospital Reports—
9 vols.

C. W. Wilson—
Corporio Humani, by C. Bartholini, 1611.

DONATIONS FROM PUBLISHERS

American Medico-Surgical Bulletin.
Buffalo Medical Journal.
Chicago Medical Record.
Clinique, La.
Dominion Medical Monthly.
Journal of the American Public Health Association.
" " Boston Society of Medical Sciences.
Medical Bulletin.
" Times.
Montreal Medical Journal.
New York Medical Times
Pediatrics.
Philadelphia Polyclinic.
Post-Graduate.
St. Bartholomew's Hospital Journal

Sanitary Inspector.
Treatment.
Universal Medical Journal.
Virginia Medical.

Pamphlets have also been received from the following :

Dr. Craik, Dr. Shepherd, Dr. DeSchweinitz, Dr. S. Knapp, Dr. Mills, Dr. R. Mackenzie, Dr. Startin. J. C. Cameron, Smithsonian Institution, Royal College of Surgeons, Lond., Dr. Barker, Dr. Foucher, Dr. Black, Anderson's College Medical School, Dr. Kirkpatrick, Dr. Fletcher, U. S. Depart. of Agriculture, Dr. Rentoul, Dr. Finley, Manhattan Eye and Ear Hospital Report.

The following are the members and officers of the British Columbia Medical Council : Dr. R. E. McKechnie, President ; Dr. T. W. Lambert Vice-President ; Dr. C. J. Fagan, Registrar and Secretary ; Dr. John A. Duncan, Treasurer. Members : Drs. J. C. Davie, W. J. McGuigan, G. R. Milne. Solicitor : A. E. McPhillips.

We have received the September number of *The Canadian Journal of Medicine and Surgery*, and are glad to note the excellent account of the meeting of the British Medical Association. It is illustrated by cuts of the principal officers of the Association and of some of the medical buildings of Toronto and Montreal.

Arrangements are now completed for the meeting of the Mississippi Valley Association at Louisville on October 5, 6, 7 and 8, 1897. The different passenger associations have granted a round-trip rate of one and one-third fare on the certificate plan. The sessions will be held at the Liederkranz Hall, and the headquarters will be at the Louisville Hotel. A long list of papers is announced.

The fourth annual meeting of the American Academy of Railway Surgeons will be held in the Auditorium, at Chicago, Ill., on Wednesday, Thursday and Friday, October 6, 7 and 8, 1897. The following are the officers of the Association for the year 1896-1897 : President, L. E. Lemen, M.D. Division Surgeon U. P. Railway, Denver, Col. ; First Vice-President, M. Gardner, M.D., Chief Surgeon S. P. Railway, San Francisco, Cal. ; Second Vice-President, Ricardo Ortega, M.D., Chief Surgeon Mexican International Railway, Cindad Porfirio Diaz, Mexico ; Secretary, D. C. Bryant, M.D., Oculist U. P. Railway, Omaha, Neb. ; Treasurer, C. B. Kibler, M.D., Surgeon Erie Railway, Corry. Pa. ; Editor, R. Harvey Reed, M.D., Chief Surgeon C. S. & H. R. R, Co., Columbus, Ohio.