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A FEW NOTES ON CEREBRO-SPINAL PATHOLOGY.*

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Toronto.

The advancement of practical medical knowledge may not be very striking from year to year, yet, experience teaches that apparently insignificant facts may be followed by momentous results. The observations and experiments of Galen over seventeen centuries ago, on the recurrent laryngeal nerves and on the functions of arteries, led to the great discoveries of nerve function and blood circulation. The investigations in respect to the work of the lymphatics made in the seventeenth century, led to our present knowledge of their important place in the animal economy. Bell's researches into nerve structure and function, made nearly ninety years ago, were a great stride forward towards the better understanding of the workings of the cerebro-spinal economy. Magendie used Bell's data, and by adding them to his own observations, based on experiment, he came a step farther into the light of truth. Little did Tyndall dream that when he was experimenting with a sunbeam which straggled into his study, he was gathering material to prove the germ theory, and in *Listerism* to revolutionize the practice of surgery. Thus it always has been and always will be—one lays the foundation and another builds on it. One isolated fact may be a key to open a door into a veritable chamber of wonders. It is never to be forgotten, however, that theory is always to be received with caution, but experimental knowledge carries its own evidence with it. In this lies the great advantage of pathological research. Diseased organs with the signs and symptoms consequent thereon, have been studied closely during the past half of a century,

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with all the assistance chemistry, the microscope and micro-photography could give to the pathologist, nor have the observers labored in vain in this marvelous field of inquiry.

In 1840, Nasse discovered that after the division of a nerve, not only was the cicatrix after healing a different texture from that of the nerve divided, but that all the nerve from the cut part to its utmost extremity had changed in character. Atrophy, degenerated myeline, fibres changed in opacity and outline were always found to be the result of division in all the cut-off nerves. Ten years later, Waller not only corroborated this, but took a step farther and showed by actual experiment that not only did this change take place, but that regeneration to the normal condition never supervened. This was a great step towards a proper study of nerve decay, and especially of insanity in relation to permanent recuperation. A breach of continuity once effected in nerve tissue, either by disease or traumatic lesion, means irreparable loss of natural structure, and as a consequence loss in some degree of normal tone and function. We know that inflammation never leaves a structure as it found it. The interosseous substance of a fracture is always different from the normal bone. A scar is a good example of change of structure, and which always remains in this condition, having assumed a physiological habit in its abnormality. It is evident then that degeneration takes the direction of the functional activity of nerve fibres. These grand facts, springing from the study of a nerve cicatrix to a nerve—then from a nerve to the spinal cord—then from the cord to the medulla oblongata and white brain substance, have given us an insight into conditions the microscope could not divulge alone. These morbid changes show, on the one hand, the close intimacy of all nerve fibres; and on the other, the radical distinction of nerve tracts. Nerve fibres seem to lie alongside of one another like insulated electric wires, yet quite distinct from one another in function, until some point of *consensus* is reached in a nerve centre.

It will be seen also that a good deal of attention has been given lately to the connection nerve influence has with nutrition. It is asserted that certain parts of nerve centres have more peculiarly the functions of enervating actions, which convey distinctive energies to focal points of assimilation.

lation. It is evident from recent examination that there exist these so-called "trophic centres." These spots of peculiar nerve movement and influence are rich with the multipolar ganglionic cells. Our anatomical knowledge teaches us that these regions thus endowed are in the fourth layer of the cerebral cortex, in the anterior cornua and in the posterior columns of the spinal cord. Prolongations from the minute cells also affect nutrition. This great fact is strikingly illustrated in irritation of the fifth nerve. It is followed by skin eruption, ulceration of the cornua and inflammation of the eye. In paraplegia with wasting of the muscles, we find its cause where the multipolar cells most abound, in the anterior cornua of the spinal cord. Progressive muscular atrophy has the same record, and an analogous condition, exists in posterior spinal sclerosis. We know how these states, consequent on impaired nutrition bring about abnormal conditions of the joints—such as fractures consequent on want of appropriation of animal matter to give the bones elasticity, and even dislocations from want of tone in the tissues surrounding the joints. Those who have charge of the insane need not be told how the least pressure or blow will produce ecchymosis, and a slight force will be followed by fracture of bone in those having brain diseases. Metastasis of so many ailments is, no doubt, due to changes following mal-nutrition, and the cause of these degenerations is in depreciated nerve supply from these great centres of influence. The initiatory diseased impulses are given from these centres, but must, however, be always distinguished from those produced by abnormal conditions of the periphery of the nerve apparatus, and followed by vascular changes consequent thereon. Such as the latter are brought about by vaso-motor irritation, and differ materially from the conditions of the "trophic centres" as causes of diseases from diminished nutrition. For example, such a disease as Addison's is only a result of trophic disorder of the sympathetic and ganglionic centres. The nervous condition always antedates the pathological changes in the supra-renal capsules. In other words, the difference lies in centric and eccentric causes.

Of late years the special nerve activities have been closely investigated. Many diseases which were formerly supposed to be entirely due to

malign blood effects are now relegated to a class of morbid processes due to nerve depreciation. In all diseases affecting nutrition of organs, or in even physiological localities, where are found perverted functions, one or more of these nerve structures are found to be abnormally deficient in multipolar ganglionic cells, or they are curtailed in size, shape changed, or polar appendices shortened. In paraplegia, with wasting of the muscles, post-mortems show degeneration and paucity of the multipolar cells in the anterior cornua of the spinal cord. Progressive muscular atrophy has the same record and an analogous condition exists in posterior spinal sclerosis. In all forms of polyuria brain changes are found, but more particularly in the semilunar ganglia of the sympathetic. The co-existence of exophthalmic goitre in kidney complications points to morbid changes in the nerve system of organic life, with one common origin, but with different manifestations. Recent experiments show that centres of nutrition are located largely in the spine and spinal ganglia. The morbid influence of impaired nutrition consequent on diseased nerve tracts is much more extensive than was formerly supposed. We see it in diseased conditions, in which are sudden metastases (such as exist in joints); also in deficiency of animal matter in bone; in want of tone in the surrounding tissues of joints, and consequently facility of luxation in articulating surfaces; easily produced ecchymosis in the insane, because of low vitality, and in atrophies of organs without antecedent inflammatory processes. In simple atrophy (not the degenerative form); in chronic arthritis; in local paresis, we often find no initiatory inflammatory symptoms, but simply a wasting of certain structures from want of capacity to assimilate building up material. It is true we often find inflammation or traumatic injury in the vicinity of these depreciating processes, but in these we can trace no direct connection between the two diverse conditions. It is evident the active state in a distant part has affected the nutritive nerve centres, and indirectly the influence of normal trophic supply is found wanting.

In one class the centric disease is primary, and in the other peripheral in its origin. These conditions are often seen paralysis following apoplexy. In a few days after the attack we frequently see an invasion of bedsores consequent on low vitality.

Slight pressure on the skin may be followed by bullæ and even eschars. These come on too suddenly after the central organ has been affected, to allow us to infer that surface causes produce them in the ordinary way.

It is not to be forgotten that morbid processes, wherever found, are, in essence, identical, even when existing in different structures. Inflammation, tumor growth, degeneration and hypertrophy are governed in their conditions of existence by general laws. These morbid states depend on the possibilities in the nerve influence and blood supply. This statement of a general law is also true wherever breaches of continuity exist. The situation or condition of a wound, an abscess, a cancer, or a fracture, may be varied, but this does not change the individual character of each, nor the distinctive vital processes involved in their pathological existence. The healing methods are the same in a cut, in nerve injury, in cicatrizing an abscess or in knitting together the ends of broken bones. Local circumstances may and do modify the character of the new structures, but the life work in building up any or all of our physical organization is uniform. The selective power to give individuality to structure is one thing and the general law of repair is quite another. The knowledge of this fact of generalization is tending to change our practice of medicine, our specifics are gradually being replaced by those therapeutic agents which supply merely material to the system. Nature is not dictated to in its heroic efforts to repair damages in the citadel of life, as it was heretofore in the empirical age of medicine. Pathology has done much for us in this direction. We virtually say to the master builders, we will supply constructive material in the shape of fresh air, sanitary surroundings, nutritious food, phosphorized pabulum and moral treatment, but you are expected to build up the waste places and to give tone to flagging energies.

It is not clearly decided where the trophic centres are situated, but it is evident in all forms of nutritive degeneration, that destructive changes take place in the multipolar cells, and often the axis cylinder is changed into merely shrunken tissue. This cell change and obliteration are more particularly seen in the front layer of the brain cortex and in the anterior cornua of the cord. There are yet undiscovered trophic localities in the

nerve masses, as there is no evidence that either the motor or sensory nerves have the functions of trophic stimulation. This misdirected force brings about mal-nutrition in many forms. Atheromatous and calcareous degenerations, general as well as local, give undoubted evidence of its malign influence. We know how emotional shock, worry, or mental depression effect the functions of organic life, in such organs as the stomach, kidneys and the heart. These derangements are brought about through nerve influence, it being the principal factor in inducing depraved nutrition. Many of our hydra-headed forms of dyspepsia are primarily caused by nerve derangement. We now know that the morbid processes of Bright's disease are due to structural changes in the abdominal ganglia of the sympathetic. In other words, albuminuria is, in its origin, a ganglionic disease (Da Costa). Keen observers are, however, often led away by the fallacy of drawing general conclusions from special cases or specific lesions. They fail in not grouping together a sufficient number of uniform cases to enable them to safely generalize. A great deal of the false theorizing arises from the jumping at conclusions without sufficient data upon which to base a medical doctrine. We need not go beyond the numerous theorizers of to-day to prove how readily novelties are dragged into a medical creed, and then the hobbyist searches for all apparent proofs to fortify his views. Such ignore the logical rule, that it requires not isolated incidents, but groups of indubitable facts to uphold a theory or to establish a medical formula. The medical literature of the last half century shows that all kinds of doctrines were propounded, which there were few pathological facts to stand on. This tendency is to-day giving place to synthetical methods, and our increased facilities to trace the foot-prints of disease into its furthest recesses, have led us to see generic relationships not heretofore dreamed of. Before these discoveries we were looking at results, and were classifying them as diseases, when the causes were overlooked, because they were beyond our ken. We were examining the branches and giving them classical names to find out afterwards that they had a common trunk and were of a common origin. This may be illustrated in many ways. For example, we now find that many diseases are results of nutritive disorder of the

sympathetic or spinal centres. A number of this class of diseases are often concomitant with phthisis, pneumonia, ulceration of the bowels, and degenerated kidneys. The sudden invasion of diabetic coma: the chemical and organic changes found in acetonæmia; the morbid processes super-inducing structural changes in Bright's disease; atheromatous and calcareous degenerations, and numberless other morbid changes and conditions, are now known to have their primary impulses in one or other form of mal-nutrition consequent upon nerve degeneration. It is not improbable that spasmodic dysmenorrhœa, visceral neuroses, some nervous forms of dyspepsia, certain *so-called* functional diseases of the heart, angina pectoris, and the various neuralgias, have the same origin. In a large number of such diseases are found destructive changes in the multipolar cells, and in the same central regions are seen the axis cylinders very much attenuated, to merely shrunken tissue. In many such cases, these otherwise active and necessary structures are changed so as not to be recognizable. A large number of heart symptoms, such as pulse intermittency, spasms, dyspnoea, or palpitation are now known to be neurosal in their origin, either through the vagus, the cardiac ganglia, or remote conditions of the sympathetic.

In this connection it is very striking to notice how the constituents of urine are determined by nerve conditions. The diabetes consequent on lesions of the organs in the base of the brain, or on some lesion of the sympathetic system, are evidences of this, and it is possible we might add to this category diabetes, due to defect in the so-called chemical changes of the blood. It is my opinion that albuminuria is only a symptom of many diseases and not a distinct malady in itself. It may be classed among the neuroses. We can even produce a change in the constituents or a superabundance of urine by diet without any disease existing, through the same influence.

We have a striking example of nerve influence in the kidney production seen in puerperal mania. Reference is not made here to that form of it superinduced by septicæmic poisoning from a disintegrating uterus, but to mania eccentrically produced from the impression made on the cerebro-spinal system through the great sympathetic. In the latter type there are found in the urine abnormal quantities of albumen. This is most

noticeable if convulsions should be present, and followed by any form of paralysis or sense perversion. As far as known its existence antedates the apparent physical results. The sudden appearance and disappearance of albuminuria is as strange a feature of kidney energy as are the abrupt invasion and departure of puerperal insanity itself, as seen in so many cases. Not only so, but in intermittent forms, the mental exaltation and this kidney elimination are co-existent, showing their interdependence from a common nerve influence. It is possible that the conditions favorable to the production of albumen may be found simply in the decomposition of normal elements in the blood-producing glands. As a rule, the more albumen there is in the urine the less urea and uric acid are to be found. There is either a check to the formation of these normal substances by the generation of albumen, or they are retained in the circulation as toxic agents, or contribute to the formation of albumen. It may be that on account of their liability to decompose and form new organic compounds, they may primarily produce disastrous results in the blood, and in a secondary way on the glandular system. The most common change of urea is into carbonate of ammonia, or into some other equally deleterious body with an alkaline reaction. We know the toxic effects of many vegetable alkaloids, so it is probable an analogous effect may be produced on the nervous system by an isomeric product of the animal economy. At any rate this hypothesis would explain in such cases the sudden production of mania, of convulsions or recovery, or equally sudden death. As a matter of fact, organic alkaloids are found in the blood of puerperal females, but their chemical grouping has not been determined. We have found that blood possessed of these unnamed alkaloids is usually—if not always—deficient in hæmacytes and hæmaglobin. It will thus be seen that specific diseases of individual organs can be traced to neurotic derangements. This is strikingly seen in skin conditions following some spinal diseases. The association of special lesions in the spinal cord so uniformly co-existent with degeneration of muscles, nerves and joints, is being closely investigated. From the condition of sections of the cord many of these diseases can be inferred. Cell change is followed by perverted function, or it may be permanent

disease. This is seen in muscular atrophy—diffuse myelitis and anterior polio-myelitis. Sometimes these causes of degeneration commence in the cord, and from it initiatory abnormal changes can be traced, but on the other hand the first evidence of disease may be in distal parts of the body. In such cases it is probable that undiscovered change had primarily taken place in special or cerebral tissues. The nerve supply simply induces pathological changes in organs and other structures. The various changes in such diseases as those of paralysis, spasm and atrophy can be accounted for in their invasion and progress by assuming the causes to exist from nutritive changes in the trophic centres, that is, when no traumatic condition is present. When centric and eccentric causes operate chronologically, the duality of malign influence is now named "deuteropathy." Our physiology thus teaches us how much proper nourishment of parts depends on nerve conditions.

It is now generally conceded that tendon—or rather muscular—reflexes are not always co-existent with Duchenne's disease. At one time, and up to a recent date, it was classed as absolutely pathognomonic of locomotor ataxia, but recent researches show that in a large number of cases this sign is absent. It seems evident the absence is due to the condition of the spinal seat of nerve supply (Prevost and Tschirew).

This location is that section of cord which supplies the third and fourth lumbar pairs. The presence or absence of this condition is no doubt largely due to the extent of nerve decay. In a medico-legal sense it is important to know with certainty that the absence of these reflexes is not negative proof of non-existence of locomotor ataxia. We are often asked in cases affecting the mental condition of a testator to diagnose this spinal disease—pure and simple—from the shuffling gait and prehensile unsteadiness of a case of paresis. The fulcrum point is, to describe a disease and its signs with initiatory mental alienation from one which, as a rule, terminates without brain disease and psychical dethronement, or, if so, only at the termination of its course. At any rate, the tendon reflex must be ruled out as having absolutely no diagnostic value in determining this disease from others of a kindred nature.

In this connection it may not be out of place to

state that much diagnostic value may be found in Zoochemistry. In locomotor ataxia, for example, amyloid degeneration in the diseased portions of the cord is very characteristic. It has been held by many pathologists to be either colloid or albuminous; this is not always correct, for the well-known chemical reaction of iodine and starch takes place, with the addition of dilute sulphuric acid; and in, addition, the microscope clearly shows bluish starch granules. These starch-like bodies are easily seen in many brain affections, and often in paresis. The condition is evidently a retrograde metamorphosis of the nerve cells. When we think of our chemistry, and remember the definite changes in the alcoholic series of bodies from starch to sugar, alcohol, acetic acid and finally into carbonic acid and water, we know that all only contain three elements with different groupings and greater oxydation, and thus complexity of the analogous bodies increases.

Cerebrin is a nerve substance containing these radical elements, combined with nitrogen and phosphorus. In a degenerative and descending scale, deoxydation would bring about a more primitive grouping of this and analogous substances, and as a result a starch-like body would be generated; in other words, it might be a sugar product. The deoxydation may be caused from deprivation of properly oxygenated blood in nerve tissue, or from an undue formation of deleterious acids in wasting tissues, or from a deficiency of nerve pabulum, or all combined. There is no doubt but the amyloid condition is more frequent than is generally supposed, and is often mistaken for fat granules, or albuminous products. Fatty degeneration may be a disease peculiar to itself, or it may be simply a change of the carbon hydrates into that form, or a sort of secondary degenerative process. A *cerebraic* sugar is thus generated, which gives a starch reaction by loss of the proper equivalents of water. This want of the normal hydrate oxide is doubtless one cause of shrinkage of brain tissue. It is atrophy from a drying up process.

The importance of further investigation, through the aid of chemistry, need scarcely be stated, but differentiated chemical tests of pathological products is one of the possibilities of the future.

Along these lines our busy workers have done

much to advance our knowledge of disease. Many pathological conditions are so distinctive that we can now state with certainty the different forms of cerebro-spinal maladies, which were heretofore only judged of inferentially. For example: The brain of a paretic needs only to be seen to enable us to write out with assurance the general etiology of the case. The condition of the blood-vessels and the presence of distinctive adventitious tissue give us a certain clue to syphilitic insanity. The atrophy of senile decay consequent upon increase of earthy substances and the decrease of normal constituents are certainties beyond peradventure and are paralleled in the shrinkage of the brain of the youthful insane. The psychical, the physiological, the vital and the chemical elements have disintegrated or are undergoing these series of descending processes in the inverse order of building up. They are returning in due procession to the primal condition of existence. We see all the gradations at once in brain atrophy, and know their relation to dementia and mental extinction. Pathology has also shown the condition of the spinal cord in locomotor ataxia. Thus might be lengthened the list of those diseases whose manifestations show on the one hand, what mischief is going on in nerve tissue, and on the other, the conditions being given, we are able to formulate the results which flow from central lesions.

It would be impossible for me to enter into a discussion of the life history of pathogenic micro-organisms, and to show their relation to pathological conditions in the great nerve centres. The fact of their existence and malign influences has passed the stage of speculation, but their causative position in the vital organism is yet in the region of hypothesis. Their power to originate disease *de-novo*, each according to its kind, in a healthy body, is one thing, and their activity to simply excite specific disease in an unhealthy *nidus* is quite another. In the former view they would be absolutely causative and resistless, in the latter they would only occasion the abnormal manifestations when the soil was ready for the seed. These are the two radical ideas, which so far are being investigated by great thinkers. The practical point in this monograph is, that no physician can honestly ignore all the facts of neurological research, proximate and remote, in

his diagnosis, and expect to be a great success^s a medical practitioner. The physician whose explorations are simply confined to the organ, or the part which may be throwing out signals of distress, yet whose origin may be in distant parts, is like the gardener who is treating for disease the shrunken up buds of a tree, when the trouble may be in the roots of the tree itself.

SYMPHYSEOTOMY *VERSUS* THE INDUCTION OF PREMATURE LABOR.

BY CHARLES P. NOBLE, M.D.,

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Until within comparatively recent times, when labor became seriously or insuperably obstructed, the efforts of the obstetrician were directed toward saving the mother. The rights of the child received scant attention, and its life was deliberately sacrificed in order to diminish its diameters whenever the pelvic canal was too contracted to permit the passage of the normal fœtus. This practice was condemned by theologians, more especially the Roman Catholics; but was justified on the ground of expediency, the position taken being that, if without the intervention of art both mother and child would die when left to the unaided forces of Nature, the physician was justified in destroying the child that the mother might live. With the revival of the Cæsarean section, under the influence of modern surgery, this ancient position has become very materially altered, and the present tendency is most decidedly to give serious regard to the rights of the child in unnatural labor. Three problems have grown out of this development of the question. 1. Is embryotomy upon the living child, when deliberately elected over the Cæsarean section and symphyseotomy, a justifiable operation? 2. Is it justifiable, in labor in moderately contracted pelves, when the obstruction is considerable and yet not insuperable, to make such violent efforts at delivery, either by forceps or version, as to threaten the serious injury of either mother or child, instead of resorting to symphyseotomy when judicious and well-directed efforts at delivery have failed to accomplish it? 3. In women known to suffer from contraction of the pelves of moderate degree, is it better to induce premature labor sufficiently early to permit

the delivery of a living child, or to allow the pregnancy to go on to full term and to effect delivery under symphyseotomy, if this proves to be necessary.

The first problem as to the justifiability of embryotomy done upon the living child, I take it, has been settled in the negative. The question no longer is, Shall both mother and child be permitted to die? nor is it, Shall one be destroyed in order that the other may live? The problem now is, Shall the effort be made by the Cæsarean section or symphyseotomy to save both mother and child, thereby increasing the prospective mortality of the mothers from one to three per cent. as contrasted with embryotomy? Or, to put it in another way, Shall one hundred children be destroyed in order that the lives of from one to three mothers shall not be put in jeopardy? As this question has only a relative bearing upon the subject under discussion, we shall not consider it further at this time.

The second problem is one which is now only coming up for solution, and has been brought to the front partly because of the large number of children who perish as the result of difficult labors, either during birth or shortly thereafter, and partly because of the very considerable number of children who are injured for life from the same cause. These are the "spoiled babies," having sustained injuries to the head, such as depressions or fractures, or great distortions of the skull, or injuries to the tissue of the brain itself, resulting in hæmorrhages and subsequently in localized palsies, epilepsy, or in greater or less impairment of mental vigor.

The comparative safety of symphyseotomy suggests that the accepted teachings of the present be critically revised with reference to the conduct of labor in cases in which the obstruction is considerable and yet not insuperable. I am inclined to believe that in the near future these considerations will considerably alter the present rules of practice. In the interests of the child, version will be less frequently resorted to. And in cases of moderate contraction of the pelvis, in which the unaided efforts of the mother, assisted by the judicious employment of forceps, do not succeed in accomplishing delivery, instead of employing violent traction efforts (which so generally injure the child, and are liable to injure the mother)

symphyseotomy will be done. These remarks are not made in a dogmatic spirit, but simply indicate the drift of my own opinion concerning this subject.

The third problem is the one which immediately concerns us to-day, and it is my purpose in this paper to present the advantages of symphyseotomy as contrasted with the induction of premature labor in the management of cases of labor in women having moderately contracted pelvises. The class of cases more especially referred to is the flat pelvis with a conjugate diameter of three inches or more, and the generally contracted pelvis with a conjugate diameter of three and a-quarter inches or more, and even flat pelvises with as short a conjugate diameter as two and three-quarter inches. It is recognized, of course, that disproportion between the head of the child and the pelvis depends not only upon the diameters of the pelvis, but also upon those of the head, and that spontaneous labor, or labor assisted either by the forceps or version, is quite possible in this class of cases when the head of the child is small or more than usually compressible. Given a woman in the eighth month of pregnancy, having a pelvis of the class under consideration, what shall be done? Shall labor be induced sufficiently before full term to permit the spontaneous delivery of the child, or its delivery assisted by forceps or version; or shall the pregnancy be permitted to go on to term, and then, if necessary, symphyseotomy be performed? This question, of course, must be studied from the standpoint both of the mother and the child. From the standpoint of the mother we have to consider the mortality and morbidity of the operation of inducing premature labor as contrasted with that of symphyseotomy. The general mortality of the induction of premature labor is given in the text-books as five per cent. The general mortality of symphyseotomy is stated to be about ten per cent. As a matter of fact, I believe that both these statements are decidedly erroneous. Five per cent. is undoubtedly too high a mortality for the induction of premature labor. I have reason to believe that in good hands, when the indication for its performance is contraction of the pelvis, its mortality does not exceed one per cent. The dangers to the mother under these circumstances are far less than they are, for example, when the indication is puerperal

eclampsia or placenta prævia. On the other hand, it is quite as absurd to say that the inherent risks to the mother from symphyseotomy are so great as indicated by a ten per cent. mortality. It is the old story of the fallacy of miscellaneous statistics. For the sake of argument it may be admitted that the general mortality of symphyseotomy is ten per cent. This represents the results which have been obtained under the conditions which exist in the practice of the profession at large. It includes cases in which the indication was proper, the operation skilfully done at the right time and after a proper technique, by skilful men; and it also includes the "too late" cases, in which the patients have been maltreated by midwives or by careless or ignorant practitioners before the performance of symphyseotomy, which conditions have nothing to do with the inherent risks of the operation. In order to contrast the relative dangers to the mother of symphyseotomy and the induction of premature labor, it will be necessary to analyze the cases. It must be recalled that the induction of premature labor is an operation done at a selected time, upon women in good condition, almost invariably by an obstetrician of experience. For the comparison to be just, only such symphyseotomies should be selected in which similar conditions prevail. Under these conditions I am satisfied that the maternal mortality will not exceed one per cent. under either operation.

In support of my judgment concerning the slight inherent risks connected with symphyseotomy, I have to submit the following recent statistics of the operation, kindly furnished me by Dr. Robert P. Harris.

Since March 8, 1893, there have been 31 symphyseotomies in the United States, with 2 women and 7 children lost. In the fatal cases one woman was in labor three days before the operation, and died of sepsis on the eleventh day. The other was in labor thirty-six hours, had a temperature of 102° and a pulse of 140, her vagina being œdematous and badly torn by forceps before entrance to the hospital. She died of marked shock in twelve hours. Three children were dead before operation, 2 were delivered by version and died under extraction, and 2 died soon after extraction.

Prof. Paul Zweifel, of Leipzig, has operated 23 times without the loss of child or mother.

The Italian record is incomplete. Since January 1886, there have been 55 operations, with 2 women and 8 children lost. One woman was in labor ninety-six hours and died of septicæmia. The other had a long labor, with shoulder presentation and prolapsed cord, and died of metro-peritonitis after twelve days.

These statistics strongly support my statements. The fatal cases were in bad condition when operated upon, after the failure of other methods of treatment, and there was no reason in any of the cases to believe that the death was in any way due to symphyseotomy. On the contrary, it was due to the conditions which were present before its performance. These statistics also include many other cases which were in bad condition at the time of operation, yet which nevertheless recovered.

I cannot refrain from calling attention to the large number of deaths among the children delivered by version after symphyseotomy, in this country. It is to be hoped that this plan of delivery will be abandoned in favor of the forceps.

From the standpoint of the child the advantages all lie with symphyseotomy. It has been amply demonstrated that a large percentage (about sixty-six and two-thirds per cent., according to Winckel) of premature children die within a few months of birth. With the incubator the infant mortality in hospitals was eighteen per cent. in the Leipzig Maternity and thirty per cent. in the Paris Maternité. Winkel's statement is explained by the large mortality among premature infants during the first year of life. The contrast between the prospects of a premature child born four or six weeks before full term, are altogether in favor of the latter, whose prospects are nearly as good as the average of infants. This fact, and the conviction that the dangers to the mother are about equal, have convinced me that symphyseotomy at term is to be preferred to the induction of premature labor.

A paper by Dr. Robert P. Harris, read before the American Gynæcological Society, in 1892, giving detailed reports of the results of symphyseotomy in Italy, convinced me of the slight risks inherent in the operation. At that time I had under my care Mrs. G., who was seven months pregnant with her fifth child. She had been delivered once of a small child (not weighed) by

vigorous traction efforts made with the forceps, the child being born with its head so injured that it lived but a short time. The second labor resulted in the spontaneous delivery of a very small child (not weighed). The third labor was a Cæsa rean section done by Dr. Howard A. Kelly, with delivery of a child weighing six and fifteen-sixteenth pounds. The fourth labor was induced five weeks before term, by Dr. Kelly and myself, and the baby, a girl, was delivered by me with difficulty, after the application of the high forceps. She weighed five and one thirty-second pounds.

Mrs. G.'s pelvic measurements are as follows: Anterior superior spines, 24 centimetres; cristæ ilii, 26 centimetres; external conjugate, 16.5 centimetres; conjugata diagonalis, 8.5 centimetres; conjugata vera (estimated), 7 centimetres. My thorough knowledge of the capacity of her pelvis, and my lively recollection of the difficulties encountered in delivering the premature child by forceps, made me hesitate to again induce labor. I decided instead to permit the patient to go to full term and then to deliver by symphyseotomy. The patient was informed that her labor would be the first in which symphyseotomy had been done instead of inducing premature labor. My conclusion had the indorsement of Drs. Harris and Parish. Symphyseotomy was done on December 5, 1892, and was followed by the high application of the forceps, and the delivery of a boy weighing eight and one-eighth pounds. The details of this symphyseotomy and the reasons why it was advised have been reported in a communication to the College of Physicians. The mother made a good recovery and again became pregnant. She was delivered a second time under symphyseotomy and the application of the forceps, on March 19, 1894, of a girl weighing six and six-sixteenth pounds, and recovered without other incident than a mammary abscess. She is thus the first woman in the United States upon whom a second symphyseotomy has been performed, as well as the first woman in the world upon whom symphyseotomy has been done in preference to the induction of premature labor.

In conclusion, I submit this paper as a contribution to modern obstetrics, in the hope that it may aid in quickening the interest of the profession in the rights of the unborn child. As the subject is comparatively new, it is probable that

the general experience of the profession will modify our views in certain particulars; but, as progress is ever forward, such changes will almost surely be in the direction of adding to the life-saving value of the agencies already at our command.

Selected Articles.

HEREDITY: ITS RELATION TO INSANITY AND IDIOCY.

In response to an invitation from your President and Secretary to participate in the discussion of the subject of "Hereditry in its Relation to Insanity and Idiocy," a promise was made to divide with others the time that might be assigned to its consideration.

There has always existed a deep seated conviction that certain diseases are transmissible by inheritance from parent to offspring. This conviction is strongly fortified by an array of statistics which, if accepted without reservation, might in themselves establish the fact. It is quite common to place insanity and idiocy in this category. So prevalent is the belief that insanity is directly transmitted by inheritance that in medico-legal proceedings it is usual to consider it a strong defence to show that insanity existed in the family of a person charged with crime. So well-grounded is the opinion that insanity may be due to a direct inheritance that its existence is the shadow that darkens households, affects plans of domestic arrangements, blights the happiness, and shapes the destinies of a large number of persons. Doubtless the mystery that surrounds the complex operations of the mind—the reported results of operations by physicians—the absolute ignorance of the laws of heredity—beyond the ken of human comprehension—have together conduced to the acceptance of speculations as actual results of well-established facts. Doubtless religious views, coincidences of events, overworked facts and ignorance have exercised an influence in the formation of opinions of this subject and their unquestioned acceptance.

That every species produces its kind is a universally recognized law. That there are physical and psychical characteristics which belong to the individuals making up the many nationalities which are transmitted and preserved from generation to generation; that there are so-called temperaments which have a certain uniformity of physical and psychical development so that they may be recognized and described, is a matter of common observation. Darwin has also presented the theory "that each of the atoms or units constituting an organism reproduces itself."

Heredity manifests itself in family likeness, the hair, gait, height, form, temperament and physical development. The "atoms or units" proceed in accordance with some uniform law of development, so that, however the stock may be crossed, the rule is that man transmits his exact physical counterpart, subject to modification due to environment, climatic conditions, etc. That the vigor of the stock does not abate is witnessed in the fecundity of the human race.

Whether a similar unvarying law governs the transmissibility of psychical qualities may be a question or in doubt. The same consensus of opinion, however, is disposed to conclude that mental traits are transmitted from parents to children in the same degree that physical qualities are inherited. This is partly true only, but the exceptions are so numerous that it may be considered a chance that the children will possess the psychical qualities of the parents. It has been demonstrated by histories of families in England that strong qualities of mind have been transmitted through generations. On the other hand, this Society may be familiar with the history of a family in New York State comprising 1200 persons of several generations, traced by Mr. Dugdale, who as paupers, lunatics, idiots, criminals, murderers and prostitutes were estimated to have cost the county of Ulster the enormous sum of \$1,300,000. In making inquiry of the ancestry of a certain family in Yates County, New York, it was ascertained definitely that 22 insane persons, criminals, paupers, or idiots, could be traced in two generations to an abandoned woman. The influence of marriages of consanguinity deserves a notice in this direction. Dr. S. M. Bemiss collected some statistics which show the nature of the deterioration that may come from this source. Of ten instances of incestuous commerce, 31 children were born; 29 were defective, viz., 19 idiots, the balance epileptic or deformed. Of 823 marriages of cousins, 3942 children were born, of whom 1105 were defective, 145 deaf and dumb, 85 blind, 308 idiotic, 60 epileptic, and only 38 insane. The results of consanguineous marriages furnish a heredity of physical imperfections rather than of psychical disease. Notwithstanding these results, and the necessarily crude notions that commonly prevail, as well as the probabilities they suggest, it must be stated there is absolutely no unvarying law of transmission established by these reported facts, because of well-known exceptions.

The average normal psychical development is not as often due to transmission or inheritance as to influences of environment, education, the degree of mental receptivity, together with the evolution that goes on from age to age. The quality called genius and knowledge does not seem to be transmitted by inheritance, but a receptive faculty, a capacity to acquire knowledge and evolve ideas,

may be a heredity. The term heredity is well-defined as "the principal or fact of the transmission of psychical or mental qualities or tendencies from ancestors." (Gould's Medical Dictionary.) The instances of the transmission of "qualities and tendencies" that have been cited, and those results which sometimes appear after consanguineous marriages, are marked examples of both physical and psychical deteriorations, mental and moral degeneration, of mental and bodily failure—increasing in intensity with successive generations—and of those defects that follow such marriages, according to the principal of reversion or degeneration, in a backward direction, even to the extinction of the line of succession. Dr. Seguin observed: "I have not, to my knowledge, ever had to attend an idiotic son of an idiot, or even the son of a man of weak intellect."

A hereditary disease is one that may be transmitted directly from parent to child. Admitting that it is established that certain physical diseases are inherited, can it be shown that insanity should be classed in this category? If it is not an inheritance, may it not in certain cases be ascribed more properly to the results of heredity? And within what limitations? Individual opinions, formed from a knowledge confined to a limited number of cases, lead some to a conclusion without further reflection. Psychological theorizing leads others to collect data to support their views, and a personal element comes to enter in to throw doubt about the value of any statistics. Hospitals for the insane have contributed their quota, which their medical officers have reported. Thus, Esquirol reported 33 per cent. of his cases were hereditary; Brigham, 26 per cent.; Thurman, 32 per cent.; Aubanel, 4 per cent.; Burrows, 85 per cent.; Hood, 9 per cent.; Moreau, 90 per cent. These statistics were all compiled prior to 1860, and cover a period of 50 years. What rule was applied in their preparation does not appear. The wide range of results at once suggests a great lack of uniformity of material, wide differences in opinion about what constitutes inherited insanity, and a wide latitude in speculation. Since 1860, the percentum of reported cases of hereditary insanity has decidedly fallen off, although insanity has greatly increased. In some reports of hospitals neither the terms "hereditary insanity" nor "heredity" appear in the list of assigned "causes." In other hospitals the number of cases assigned to heredity has been steadily declining. At the Pennsylvania Hospital for the Insane, of 10,560 cases, heredity was assigned as a cause of insanity in eight cases in every thousand. At the Utica (N. Y.) State Hospital, where the statistics have been prepared with a considerable degree of uniformity, the annual percentage varies from four to six. While in some of the American hospitals it is somewhat larger than that just

named, generally the reported percentage in European hospitals is very much greater than in this country. Possibly this is owing to different social conditions that prevail, in breeding, debauchery of parents, greater mental and physical deterioration, the lines on which observers have made up their statistics, as well as the tendency to accept and follow views of recognized authorities. Whatever may be the explanation of the differences of reported results, it is apparent that in recent years the tendency is to attach less importance to the assumption that insanity is directly transmissible by inheritance. By many it is wholly ignored as a direct factor in the production of any considerable amount of insanity; at least inheritance is not named as an assigned cause. If the statistics presented had been prepared by observers holding the same theories, and from exactly the same data, there would be but one conclusion—that the inheritance of insanity (if there be such a thing) is rapidly diminishing.

Referring to personal observations, an examination of 347 patients admitted during two years in the Pennsylvania Hospital showed that the probable and direct causes of insanity in 188 cases was neurasthenia, or nervous exhaustion from overwork, strain and worry; some form of general ill-health; the puerperal state; septic conditions, etc., and the element of inheritance did not appear or was not ascertained. The remainder were cases of paresis and other forms due to brain degenerations, senile failure, or organic disease, some with a history of marked heredity. Twenty-seven, or 14 per cent., only had a family history sufficiently marked to warrant the assumption that heredity was the probable cause of insanity—that is to say, there had been insanity in parents or along a family line. Exceptionally marked instances of insanity in families have come under my notice, of which two may be briefly presented: Three sisters were brought to the Pennsylvania Hospital on the same day. A brother, said to have been demented, had died about two weeks previously, as was inferred, from gradual inanition and neglect. All had similar delusions of suspicion, of the operation of unseen agencies, which extended to their food, clothing, beds, the air of their rooms. The family history could not be obtained satisfactorily on account of the extreme reticence of all parties. The father had held a high official position under the Government. It was an illustration of those cases of rare occurrence where insanity is communicable in a family, or to persons closely allied in companionship and life, with few relations to the world about them. In this case one sister became insane, and gradually dominated by her superior will-power the other two. From the eccentricities of these people, their isolation and physical appearance, there had evidently been a degeneration,

physically and psychically, from the normal family standard.

Recurring to the reference made to 347 cases, mentioned above, it was stated that in 188 the cause in each was directly traceable to some incident in the life of the patient or to a physical deterioration or disease. There was sepsis, loss of body weight, deterioration in the quality and constituents of the blood. The nutrition of the brain was impaired, and while many thousands of persons suffer in some degree from those conditions and recover, insanity, which is so often only a relative condition, was but a further incident in the cases cited. In other words, insanity, or mental disorder, as in these cases, was acquired. More than 140 recovered. Now, will it be said that they had acquired something they could transmit as an inheritance? If so, what was it? Is there anything material, as a bacillus of insanity, that may be received as an inheritance? That a neurotic temperament may be a heredity is believed to be in accord with common observation. Such, however, is the superstitious, vague sentiment existing in relation to insanity that a fear of contamination is the family skeleton. In relation to the class of cases we are now considering, it is a practice to assure relatives, when recovery does take place, that the probability of a recurrence or of the transmission as an inheritance is no greater than in those persons observed by the physician who have a pneumonia, rheumatism, or fever. Suppose the fact were otherwise, and insanity in some degree was directly transmissible by inheritance, surely man would rapidly deteriorate and degenerate until mental soundness would be of rare occurrence, and in the case of idiots and imbeciles the race would end, as they would cease to procreate.

In the procreation of children, if both parents are of exactly equal potency and not related, the expectancy will be that the physical and psychical characteristics of their children will have a close resemblance to the parents. Thirty-one marriages of parties not known to be related or descendants of relations, produced 207 children. None of the children were reported to have been born with any defect. (Dr. Bemiss.) If the potential power of one parent is less than the other, and this may be the general rule, while the expectancy would be that the offspring would partake of the stronger parent, there is no absolute rule, even here, notwithstanding the probabilities. There is a corrective process in constant operation. That nature, constantly, wholly eliminates or limits the influence of the weaker element is certainly true, as many families show members of very opposite degrees of psychical development. The reverse is also true, that deterioration is sometimes not wholly eradicated, but continues in an increasing degree. Two persons of marked neurotic organiz-

ation may transmit their temperament to offspring in a more intensified form, and in the second or third generation, if there is no cross by which it may be by chance corrected, a neurotic heredity or predisposition is established, from which may come with slight exciting cause some form of mental degeneration, acute insanity, epilepsy, etc. In-breeding of temperaments, then, rather than consanguineous in-breeding, is more conducive to the development of the neuroses, to eccentricity and insanity of the degenerative type.

In the discussion of heredity in its relation to insanity and idiocy an attempt is made to show the diversity of facts and views that exist, that there is often a personal element that enters in the preparation of statistics, that are limitations of our knowledge; also, to formulate an expression of views or principles which are now presented as conclusions:

1. Physical characteristics, those distinguishing the human species, are transmissible as an inheritance.

2. Knowledge, genius, and culture are not an inheritance, but depend rather on influence, education and environment. Mental receptivity is transmissible. Psychological qualities are not necessarily an inheritance requiring favorable surroundings and circumstances for growth and development.

3. Insanity as a disease is not transmissible by inheritance, but may be acquired or evolved from a neurotic heredity as a basis.

4. A neurotic predisposition is transmissible by inheritance, but there is no absolute rule that it will be transmitted in any given case, or in any case.

5. In-breeding of neurotic temperaments is most conducive to the creation of a neurotic heredity.

6. Idiocy and imbecility may be a defect, having an origin in consanguineous marriages, prenatal condition, accidents, arrested developments, infantile meningitis, tuberculosis and lack of potency on the part of one of the parents from unexplained causes.—John B. Chapin, M.D., in *Times and Reg.*

THE THEORY AND PRACTICE OF PROTECTIVE INOCULATIONS.

Dr. Klein delivered a lecture on this subject at the London Institution, Finsbury-circus, on Monday, March 4th. Starting with the axiom that "the more accurately we know an enemy, the more easy it is to overcome him," Dr. Klein said it nowhere more adequately applied than in the prevention and treatment of disease. Since it had been conclusively shown that communicable diseases were caused by specific parasites which

elaborated within the body specific poisons called "toxines," causing the particular symptoms of the disease, it had become possible to study more accurately these causes of disease and devise better means by which the life of the parasites and the action of their toxines might be inhibited or altogether destroyed. The treatment of infectious disease had been greatly advanced, and although some of these disorders were still in a stage of generalities, far-reaching changes had taken place in others. The system of antiseptic surgery discovered and applied by Sir Joseph Lister—instrumental in reducing the mortality of surgical operations, once very high, to an almost nominal figure—and the exact knowledge we now possessed of the propagation and spread of cholera and typhoid fever by means of water, milk, and other articles of food were cases in point. Scientific medicine, in contradistinction to empirical medicine, had acted on the more rational axiom that "he who cures may be the cleverer, but he who prevents disease is the safer physician," and had gradually unravelled the complex problems of the nature and cause of diseases, and in many instances devised means of preventing communicable disease. Dr. Klein then referred to the remarkable achievements that had been made in general sanitation and in the direct prevention of disease by means of protective inoculation, of which Jenner's discovery of vaccination was the earliest example. In all civilized countries and among all civilized peoples the protective power of vaccination against small-pox had been amply confirmed and established. Two points were particularly worth considering—(a) was vaccinia or cow-pox a modified or attenuated form of human variola? or (b) was it a separate and specifically different disease? With regard to the first point, most pathologists and sanitarians agreed with the original proposition enunciated by Jenner—namely, that vaccinia or cow-pox was a mild form of small-pox in the cow, and just as an individual who had passed through one attack of small-pox was furnished with resistance and immunity against a second attack, so also an individual who had been successfully vaccinated has practically passed through a mild attack of localized variola, was therefore possessed of immunity against a second attack, and was protected against small-pox. In some other infectious diseases—scarlet fever, measles, and whooping-cough—one attack, however mild, furnished, as a rule, immunity against a second attack. This was acquired immunity, as distinct and different from natural immunity, as, for instance, the natural immunity of most young children against typhoid fever or cholera, and of many adult persons against measles. With regard to the second point, many pathologists, while recognizing the protective power of vaccinia against small-pox, did not admit that cow-pox

was an attenuated form of the human small-pox, but that it was a specifically different disease. This belief was based chiefly on the many failures which experimentalists had incurred in trying to produce cow-pox in the cow by inoculation of this animal with human small-pox. It was equally true, however, that there had been many positive results, inasmuch as in a few instances there had been produced in the cow by inoculation of matter derived from the vesicles of human small-pox typical cow-pox, which on transmission to the human subject produced vaccinia and not variola, and on further transmission from human being to human being continued to produce vaccinia in all its typical characters. Thiele, Ceeley, Badcock, and, in more recent times, Voigt, Fischer, King, Simpson, Hime, he (Dr. Klein) himself, and Cope-man had had unmistakable positive results. The argument which maintained that vaccinia was of a specifically different nature from human variola was faulty for two reasons. First, as a matter of actual experience, vaccination was now and then followed not simply by the production of a vaccine vesicle at the seat of insertion, but there appeared other additional vesicles even of the character of a general eruption; this, though of rare occurrence, was nevertheless a strong argument for its derivation from variola. Secondly, the "breeding true" of vaccinia in the human subject through however many transmissions and the failure of a reversion of vaccinia into variola were completely paralleled by what occurred in a disease occurring in the sheep, and was in all respects homologous to variola—namely, variola ovina or sheep-pox. Protective inoculation was used against this disease with large success in the South of France, Austria and Germany. The lymph was "nursed" by local insertion through a succession of sheep, always producing a large local vesicle with mild constitutional symptoms. Such local inoculations had been practised over and over again, and as a general rule only at the places of insertion did a vesicle become formed; there was no general eruption, and, therefore, no reversion to the original type. It was clear from this that lymph derived originally from a vesicle of true variola of the sheep "bred true"—*i.e.*, produced on transmission from sheep to sheep only local protective vesicles. If, however, this lymph were injected into the vascular system of a sheep, true variola might be the result. Cheauvau, he (the speaker) and others had had cases of this kind. But while the inoculation was made by cutaneous insertion, local vesicles only resulted. From this it followed that the argument because lymph derived from the cow and transmitted through human beings did not ultimately revert to variola, but produced a local vesicle only, in no way justified the conclusion that the two diseases, variola and vaccinia, were specifically different. The conclusion to be

drawn from this was that Jenner's original contention was established. Dr. Klein then briefly referred to the work of Pasteur on anthrax and fowl cholera—a work which had been made possible by the discoveries of Koch. Satisfactory results in protective inoculations on the same lines as those pursued by Pasteur had been obtained in several—swine fever, swine erysipelas, etc.—but not in all infectious diseases. Unfortunately, not in all infectious diseases did one attack protect, although a first attack furnished, for a time at any rate, a certain resistance; such was the case in diphtheria. In cases of acquired resistance or acquired immunity a condition was produced by the first attack by which the body was rendered unfit for a second attack. This sometimes happened after a mild first attack, but in other instances this only furnished a slight resistance, and in still others no resistance. In these two latter cases the resistance could be increased by repetition of the mild attack and by using the second time a somewhat stronger virus and producing a somewhat stronger effect, but still only a passing one; and after many repetitions in these cases the resistance thus acquired could gradually be increased to a high degree. It had been shown, both for animals and for man, that the immunity produced by artificial inoculation of attenuated culture or acquired in the natural manner by a first attack of the disease, was due to the presence in the blood of chemical substances produced in the course of the first attack; these substances were capable of neutralizing the activity of the specific microbes. Moreover, it was found by Behring that the injection of blood serum of an immunized animal was capable of protecting an otherwise susceptible animal and of furnishing it with immunity, so that infection with the microbes of the particular disease was prevented. The degree of this protective or immunizing power of the blood of an immunized animal stood in direct proportion to the degree of immunity or resistance which that animal had acquired by the previous injection or by the previous attack. That in diphtheria the blood of an immunized animal possessed an immunizing or protective property in other animals had been fully proved, but it must be added at the same time that the protection thus produced was only of comparatively short duration. In the experiments in which the immunizing and protective action of the blood serum of an animal artificially immunized against diphtheria or tetanus respectively was ascertained, another important fact was elucidated by Behring, afterwards confirmed by a large number of workers—*viz.*, that this serum not only possessed protective potency when injected into an otherwise susceptible animal, but that if injected into an animal in which the disease had already made its appearance it (the disease) could be cut short and

the animal would recover. The serum, therefore, acted as a curative agent. Such serum had been applied both in diphtheria by Behring and Roux, as also in tetanus by Tizzoni and Centanni, with striking success in the human subject; and the published accounts of the cases so treated in Germany, Austria, France, Italy and England placed it beyond doubt that in a large percentage of cases the disease was cut short, and even in severe cases recovery achieved. A question of great scientific interest was the manner in which the serum of animals immunized against diphtheria or tetanus acquired its protective and its curative potency. Looked at from a theoretical point of view, this double action might be due to either of two things: (a) the serum might contain one substance which had both these actions, or (b) it might contain two different substances, one for each separate action. The whole subject was only at the commencement of being understood, but this much was already certain, that the work on a sound experimental basis had already been productive of good results, and was likely to be productive of still greater achievements in the field of protective as well as curative practice.—E. E. Klein, M.D., F.R.S., in *Lancet*.

PSYCHOLOGICAL INTERPRETATION OF HYSTERICAL ANESTHESIA.

Pierre Janet, known for his investigations on automatic states and works on the psychology of the hysterical, has attempted an explanation of hysterical anesthesia accepted by Dutil in his monograph on hysteria as the best yet given. He refers the anesthesia, as well as other of the paralytic stigmata of hysteria, to an enfeeblement of the higher functions of the cortex; in fact, there is now a general consensus in attributing this disease to anæmia and malnutrition of the cortical centres. The idea of a narrowing of the field of consciousness, corresponding to the contraction of the field of vision, as the basis of the anesthesia, is peculiar to M. Janet's "interpretation." In brief, his explanation is substantially as follows:

Hysterical anesthesia is a species of *distraction*. In the normal individual under the influence of voluntary abstraction phenomena are witnessed not entirely differing from those which characterize the anesthesia of the hysterical. A person is engaged in his ordinary occupation and does not hear the din of the crowded city or perceive objects or contacts; he is, we say, busy with other things. When the attention is strongly applied to a subject of interest, even violent sensations may fail to elicit any response. Pascal forgot his physical sufferings while endeavoring to solve a problem. Now, hysterical persons have

such distractions intensified. It is easy to produce in them by diverting their attention momentary insensibilities which have all the characters of their permanent anesthetics.

At the same time, the permanent *stigma*, the hysterical anesthesia, cannot be altogether likened to a distraction pure and simple. It is more enduring and is more clearly defined. It exists even when the attention of the person is not engrossed by a fixed idea or some external object. It does not disappear when he desires it, as in the case of the transient insensibilities which accompany distraction in the normal individual. The latter, it is true, does not hear the noises of a large city, the ticking of a clock near him, and yet he can hear them if he tries to. There is, then, in hysterical anesthesia, which is a pathological phenomenon, something more than there is in distraction, a normal phenomenon.

In order to understand the differences which distinguish these two states, as well as their resemblances, it is necessary to have well in mind the psychic mechanism of the *perception of sensations*. We may represent this as an operation occurring in two stages. In the first stage various sensory impressions come to the cortex, constituting the elementary psychic phenomena, the consequences of multiple peripheral excitations (tactile, visual, auditory, etc.) These are the elementary sensations—primary states of consciousness. So far the notion of the personality of the subject does not come in. In the second stage a reunion, a synthesis, is effected of these elementary phenomena with the vast notion of personality, that is, with that aggregate of memories, of past sensations, of facts previously acquired, which constitute the idea of personality which enables the subject to recognize, that is, *perceive* them as like or unlike, Janet calls this *personal perception*.

Now the man best endowed is incapable of thus regrouping together, at each instant, in one same personal perception, all the elementary sensations awakened in him by the innumerable excitations which constantly assail his various senses. A great many of these elementary sensations are not included in his personality. They have not passed the threshold, and remain thus, *unperceived but real*, in the state of *sub-conscious* sensations. The maximum quantity of sensations which the subject can at a given moment assimilate, re-group in his personal perception, will give the measure of the *extent of his fields of consciousness*.

Suppose the case of a normal individual listening to a lecture. He will perceive a certain number of sensations, auditory, visual—the words, the voice of the lecturer, his attitude, his gestures; but all the rest, the tactile, thermic, muscular impressions which he may receive at the same instant will pass unperceived, and remain in the state of sub-conscious sensations. If instead of listening

to a lecture, he undertakes immediately after the solution of a problem in algebra, his field of consciousness will be occupied by another series of sensations and images, all other sensations remaining in their turn in the state of sub-conscious phenomena. But by reason of the alteration of perceptions, as fast as he applies his attention to different objects furnishing different sensations, he will be able at last to perceive all the impressions. By this we can understand what is distraction, simple and normal.

Suppose now the case of a patient whose mental activity is enfeebled, whose field of consciousness is in a certain sense contracted to the point that he can no longer perceive at once more than a very small number of sensations; this person will neglect little by little to attend to the sensations which are least important for his habitual duties—the tactile sensations, for instance—applying himself to those, more indispensable, of hearing and of sight. During a certain period he will still be capable of heeding those neglected sensations and of rearranging them momentarily in the field of his personal perception when his attention is directed to them; but at length the "bad psychological habit" is formed, and the time comes when he no longer can perceive them consciously; we prick his arm and to his surprise he does not feel the prick. After having been "distracted" (*un-distract*) with regard to these sensations, he has finally become anæsthetic. The anæsthesia of hysterical persons is then a symptom of weakness, of mental torpor; it is the consequence of the narrowing of the field of consciousness. These patients being able to grasp and include within their personality only a very small number of sensations, insensibly accustom themselves to direct their personal perception always toward the same group of sensations, and they come at last to the point where they can no longer apply it to the group of sensations which they have formed the habit of neglecting.

These theoretical considerations enable us to understand why at the onset of their malady, young hysterical patients have no anæsthesia. They have only transient insensibilities, mobile at will, which the least distraction brings into being and which a little attention suffices to dissipate; at a more advanced stage, these insensibilities tend to become fixed and permanent. A more forcible appeal to the attention is then necessary to bring back momentarily the personal perception of sensations becoming more and more faint. Those sensations which are not perceived by the personality are nevertheless real; they are not entirely lost. They persist and continue to act in the latent state beneath the horizon of consciousness. In this sub-conscious state they may still have motor effects and influence other ideas. Most hysterical patients under hypnotism recover these

impressions which were not consciously experienced during the waking state.

If we apply to hysterical anæsthesia these essential notions, we may say that this morbid condition consists in an enfeeblement of the personal perception, which is limited to a certain order of sensations, to the exclusion of others. The other sensations unperceived and remaining in the sub-conscious state are nevertheless real, persist, act, and take part in the automatic functioning of the person's mind. We can understand why these anæsthesias are sometimes systematic, elective and mobile; why they disappear temporarily by suggestion, or when by any means the attention of the subject is forcibly directed to certain of these sensations apparently lost; also why these anæsthesias are aggravated when the patient is distracted by a reverie, by the obsession of a fixed idea, etc.; why, in fact, since the sensations which seem not to be perceived exist in reality in the sub-conscious state, these anæsthesias do not entail grave perturbations in the automatic functions of these patients; finally, why these anæsthesias are a matter of indifference to the patients and sometimes exist without their knowledge. Janet thinks that the interpretation which he has proposed of the tactile anæsthesias may equally be applied to all the sensorial anæsthesias, and that it makes comprehensible the particular characters of hysterical amblyopia. It is quite natural that the patient should neglect from the first the sensations which correspond to the eccentric parts of the visual field, and that he should perceive only the images the nearest the point of fixation. Hence the concentric form of the contraction of the visual field.—Ed. in *Boston Med. and Surg. Jour.*

THE POSTURE OF THE HEAD IN ACCIDENTS WHEN THE PATIENT IS UNDER AN ANÆSTHETIC.

(Concluded from April Number.)

Since Dr. Halsted has fired a shot at the therapist, I will have a shot at the surgeon in return. Dr. Abel will agree with me when I state that morphia is not a vaso-motor depressant; on the contrary, it is recognized as quite a powerful stimulant to the heart and vaso-motor system in ordinary doses.

The position I want to emphasize about the head under these circumstances is that it should be extended and craned forward in order to let the air pass in. One of the deaths I saw, which occurred in Dr. Goodell's practice, was due, I am confident, to respiratory failure. I took charge of the head and Dr. J. Wm. White used Sylvester's method of artificial respiration, and it was interesting to notice the difference in the respira-

tory sounds when the head was in the ordinary position and when it was pushed forward in the way I have described.

The last point perhaps may have some relation to the question which Dr. Halsted has brought up in regard to why it is that in some years there are more deaths than in others. So far as I know, there have been no carefully carried out experiments in regard to the fatality of chloroform under varying conditions of the atmosphere. In Galveston there are very few deaths from chloroform. Lawrie has now had about 30,000 chloroform anæsthesias without a death, and only a few accidents, not alarming. Perhaps it is that the condition of the temperature of the air—humidity and barometric pressure may have something to do with the quantity of chloroform which is taken into the chest, for it is not the quantity of chloroform which is put upon the towel, but the quantity which the patient takes into his lungs from the towel that is to be considered. This emphasizes still further Lawrie's statement that just as soon as the patient's respiration is getting stormy we must stop the administration, because if you do not do so you will not know how much chloroform the patient is getting.

Dr. Abel.—The question is a matter of dosage. Small or therapeutic doses of morphine have no effect to speak of on blood pressure. It is a very different matter when toxic doses have been taken. It is a notable fact that morphine has a more powerful action on the respiratory centre than on the vaso-motor centres.

I have listened with great pleasure to Dr. Hare's interesting paper. His report to Lieutenant-colonel Lawrie, of the Hyderabad commission, to which he has made reference in his remarks to-night, contains valuable confirmatory researches on the effect of chloroform on the respiration and circulation, and all of us, I feel sure, will agree with him in his conclusions on these points.

The question has been raised to-night of the relative value of ether and chloroform. I was myself brought up under a chloroform regime, and when I first began to teach I put it rather more highly in the list of anæsthetics than I am inclined to do to-day. The Germans are now making a careful examination of the comparative merits of chloroform and ether. Many of their surgeons who have hitherto favored chloroform above ether are turning about and it would appear that chloroform is going to lose the day. Laboratory investigations are giving us fresh proofs of the greater safety of ether.

Chloroform has a remarkable affinity for some of the substances composing the nervous system. The brain and the medulla seem able to pack it away even when it is breathed in very dilute air solutions. Thus Kronecker and Cushing

have found that the breathing of air containing only 0.34–0.42 per cent. by volume of chloroform will still lead to paralysis of the respiratory centre; and Pohl, following out some early work of Schmiedeberg's, has shown that in the stage of complete anæsthesia the brain contains about three times more chloroform than an equal weight of blood, blood containing 0.015 per cent. and brain substance 0.0418 per cent. chloroform. We have some information, therefore, as to the localization of chloroform in the body. Schmiedeberg long ago demonstrated that the serum of the blood contains very little chloroform during anæsthesia, not more than would be dissolved in water, and that the chloroform taken up and carried by the blood is bound to its red and white corpuscles. From experiments made by Pohl we know that it is the lecithine, cholesteroline, fatty matters, and the protagon of the corpuscles of the blood and of the cells and fibres of the central nervous system to which the chloroform is tied. What proportion of chloroform is taken up by such viscera as the liver we do not yet know.

If so weak a solution as 0.5 per cent. of air volume will still, after being breathed for some hours, cause cessation of breathing, that is rather against chloroform, even in the light of modern improvements in the administration. Paul Bert in 1884, proposed that only a "titrated" air solution, containing at the most no more than 4 per cent. of chloroform, should be used for anæsthetic purposes. This method was employed for a time by a few practical anæsthetics (Clover) and is said to have reduced the number of chloroform accidents. But for some reason or other, either because accidents still occurred or because the required apparatus was cumbersome, the method was given up.

The method of *le mélange titré* is, however, being revived, only ether is being used instead of chloroform. Dr. Spenser, an American chemist, working in Schmiedeberg's laboratory, has found that the inhalation of air containing 1.5 per cent. of ether by volume, for two hours, causes no anæsthesia in animals, the result being only a mildly hypnotic condition. If the air breathed contained 2.5 per cent. of ether by volume the anæsthesia was also found to be entirely incomplete, the reflexes in this instance being exceedingly lively. When the respired air contained 3.19–3.62 per cent. of ether, complete anæsthesia was attained within 25 minutes, and could be kept up for hours without any respiratory disturbance whatever, and without damage to the heart. When 4.45 per cent. by volume of ether was employed, anæsthesia was complete within fifteen minutes, the breathing was slower but regular, the heart-beats a little more rapid and weaker than normally, but still of a regular rhythm. At 6 per cent. by volume of

ether admixture the limit of safety was reached, for now cessation of the respiration occurred within 8-10 minutes after allowing the ether to be breathed. Artificial respiration, however, always restored the animal, no matter how often the experiment was repeated. Spenser's experiments, in which careful chemical analyses of the respired air were made, thus substantiate Snow's results, gained many years ago (1858) by crude methods, that an air mixture containing about 3.5 per cent. by volume of ether will keep up an anæsthesia for many hours without endangering the respiration or circulation. We see, too, from Spenser's experiments that even with ether there is but a narrow limit between safety and death.

This summer, in the pharmacological laboratory at Bonn, I saw an apparatus which allows us to give ether to human beings according to this safer method of *le mélange titré* with great success. The arrangement is such that the mixture can be made of air and ether in such proportions as you want it. It is then carried through valves that are so easily moved that there is no work of any consequence for the chest of the patient. I was told there that they had anæsthetized patients by this method with great success. A further advantage of this method is that air mixtures of ether that do not much exceed 4 per cent. are non-irritating to the mucous membrane of the respiratory tract. Dreser has made experiments on this point and has found that up to 5.4 per cent. by volume of ether vapor the mixtures were pronounced by his subjects to be easily borne.

The absence of knowledge as to toxic doses, that is, as to the amounts pro kg. of body weight from which no recovery is possible, is greatly to be regretted.

Unfortunately, too, we have, as far as I am aware, no careful experiments as to the localization of ether in the organs of the body, and no equally exhaustive experiments as to its chemical fate in the organism as compared with chloroform.

One other point in the way of chloroform is the tendency to degeneration of the important viscera after its use. You cannot chloroform the healthiest and strongest bulldog, notably a tough species of animal, two successive times without his dying from the after-effects of the drug. Keep him deeply under anæsthesia with chloroform for four hours, let him recover, and on the third day following repeat the experiment, keeping him again deeply under the influence of chloroform for four hours, put him away into his pen, he will regain consciousness as usual, but in the course of a few days death will ensue. Whether carefully wrapping up an animal in cotton wool would keep the animal alive after two such periods of heavy chloroforming I cannot yet say.

I have been much struck by the poisonous

nature of chloroform in feeding experiments that I have undertaken for the purpose of studying changes in the metabolism of the liver. Repeated doses, even when not large, and single large doses (6.9 grams) according to the weight of the animal, soon cause a profoundly cachectic condition, the animal's coat becomes shaggy, it loses weight and in the course of 6-14 days it dies, no matter how healthy it was before. Others have demonstrated that in such cases a marked fatty degeneration of many organs, notably of the liver, kidneys and heart, has been induced. Kast and Mester have come to the conclusion after an examination of the urinary constituents, particularly of the so-called "neutral" sulphur compounds, that long-continued chloroform inhalations induces a profound disturbance in proteid metabolism, extending over several days. Of no little importance is the fact that it requires considerable time for the organism to get rid of chloroform, whether taken up from the lungs or from the digestive tract. This is demonstrated by the increased elimination of chlorides after chloroform anæsthesia, experiment on animals showing that the greater part of the chlorine of the retained chloroform is excreted in the form of chlorides, and that even on the fourth day after the administration of the chloroform the urine still contains an excess of chlorides.

One reason then why the Germans are turning about is that their studies have led them to believe that many of the deaths that occur very shortly after a prolonged administration of chloroform are due to the serious lesions of important organs induced by this drug. *Virchow's Archiv* and other journals and the inaugural dissertations of the last seven or eight years have had numerous contributions on this subject.

A recent contribution by Selbach from the laboratory of Prof. Binz entitled "Are fatal after-effects to be feared as resulting from long-continued ether inhalations?" reviews the literature on the untoward effects of chloroform, and describes a series of original experiments made with the view of determining the poisonous after-effects of prolonged etherization, and from these the author is led to infer that there is little or no danger of a fatal after-action following anæsthesia by ether in the case of human beings. Here too, then, on this important side of the question the advantage lies with ether.

Dr. Theobald.—Regarding the use of atropine preceding the administration of chloroform, I may say that for a number of years I have been in the habit of giving a hypodermic injection of $\frac{1}{4}$ gr. morphine with $\frac{1}{100}$ of atropine previous to the use of chloroform, and the effect has been most satisfactory. Not only is the heart-depression in a great measure obviated, but the patient comes more quietly under the anæsthetic, and the recovery from the anæsthesia is slower and more

satisfactory. The patient does not wake up suddenly with restlessness, but wakes up in a sleepy, good-natured state, and submits to the dressing with less objection.—H. A. Hare, M.D., in *Johns Hopkins Hospital Bulletin*.

“WITH US THER WAS A DOCTOUR OF PHISIK.”

To those of us who in our leisure hours have had the time and opportunity to study the old English language, there comes, even in the busiest moments, a very pleasing recollection of the lines from Chaucer's pen, and perhaps the favorite one is the Prologue from the “*Canterbury Tales*.”

One's love for books cannot be but increased by careful reading of his writings. To enter upon even any superficial analysis of the several stories that go to make up his wonderful collection, would require much more of time and space than are here permissible. It is perhaps sufficient to call attention to one portion of the Prologue that has a direct bearing upon our own profession of medicine. It will be remembered that in the Prologue is laid before us the general plan and several characters of his whole work—written, no doubt, in the year 1386.

In the Prologue we are introduced to persons of all ranks and characters, brought together accidentally, as bound upon the same pilgrimage of journey. The clerical pilgrims are particularly numerous. Chaucer undoubtedly aimed directly and particularly at the leading corruptions of the Church at that time, and yet he has, with consummate skill, introduced, among other characters, the Doctour and the Practice of Phisik.

Chaucer lived in a period of remarkable literary activity, and, while there may in some places be difficulty in translating his writings, by the average student he is as easily and clearly understood as Spencer or Shakespeare, and he may be read at any time without the aid of a glossary or grammar. Some acquaintance with Chaucer's allusions and his descriptions must of necessity be of a general value to the student of medicine, as well as to the student of literature.

But recently an opportunity occurred to urge a more extended study of medical history, the subject matter of this paper being a plea for a better knowledge of the leading facts and theories pertaining to our profession. While the present paper is not directly concerned with medical history, it calls attention to Chaucer's brief allusion to the “*Doctour*,” and it may enable us to secure a more comprehensive view of the prevailing idea of the practice of medicine in vogue during his period.

From the Prologue (Morris), p. 13, the following pleasing description is taken.

With us ther was a Doctour of Phisik,
In all this world ne was ther non him lyk
To speke of phisik and of surgerye ;
For he was grounded in astronomye.
He kept his pacient wonderly wel
In howres by his magik naturel.
Wel cowde he fortunen the ascendent
Of nis ymages for his pacient.
He knew the cause of every maladye,
Were it of hoot or colde or moiste or drye,
And where engendered and of what humour ;
He was a verrey perfight practisour,
The cause I-know and of his harm the roote
Anon he yaf the syke man his boote.
Ful redy hadde he his apotecaries,
To sende him drages, and his lecutaries,
For ech of hem made other for to wynne ;
Here frendschipe has not newe to begynne.
Wel knew he the olde Esculapius,
And Deiscorides and Eek-Rufus ;
Old Ypooras, Haly and Galien ;
Serapyon, Razis and Avyoen ;
Avernosf Damascien and Constantyn ;
Bernard, and Gatesden and Gilbertyn.
Of his diet mesurable was he,
For it was of no superfluite,
But of gret norsching and digestible.
His studie was but litel on the Bible.
In sangwin and in pers he clad was al,
Lined with taffata and with sendal.
And yit he was but esy of dispence ;
He kepte that he wan in penitence.
For gold in phisik is a cordial,
Therefore he lovede gold in special.”

Search where we may, in ancient or in modern literature, where shall we find anything that in simplicity of style, force of meaning, equals the above. It may be compared only to Polonius' advice to his son from the pen of the immortal Shakespeare. Not a line but that upon close study proves to be a gem in itself. Who can question its value to the “*Doctour of Phisik*” of to-day ?

Chaucer's writings are not, as have often been supposed, those of a recluse—an indifferent, cold individual ! He loved good company ; he frequently met at the festive board. His very simplicity of expression gains for him an admiration that is spontaneous.

The clipping, taken from his original writings, will bear in some places interpretation and explanation.

In the first line is undoubtedly meant, “there was also a Doctour of Phisik.”

He kepe his pacient wonderly wel—
In other words, he *watched* him and cared for him, as any doctor would naturally do.

It should be borne in mind that the *howres* alluded to in the text are the astrological hours. As a good and careful physician, he was particularly careful to be on the lookout for a favorable star in the *ascendent*. Of the medical science of the Middle Ages, a great deal was dependent upon astrological and very superstitious observances.

In many other places and in many other of his works, Chaucer alludes to *magik naturel*—practically the same allusion used in the present connect-

ion. In "The House of Fame" (p. 169—180) he uses the same term.

Of the humours mentioned, it is generally admitted that there were four—hot, cold, dry and moist! In a similar manner, Milton alludes to the four humors in his "Paradise Lost," II, 878.

Anon he yaf the sick man his boote.

The word *boote* is here employed in the sense of *medicine*. The word originally meant, and in fact, originated with the word *beste*—to kindle, to light—the literal meaning to light, to rekindle, to repair. From the same source, by means of various interpretations and usages, we derive the English boot, booty, bootless, better, etc. How really interesting to trace the derivations of the various words, even in a single paragraph.

Again, there is another most interesting word—interesting particularly to the physician; this is the word *dragges*. We find this by comparison that in one text it appears as *dragges*, in another it is written *drogges*. Yet, strange as it may seem, *dragges* is admitted to be the correct interpretation. In the French literature of to-day, familiar to every physician, we find the word *dragée* as a sort of a digestive powder for weak stomachs.

Then, as to the authorities mentioned by the author we find many—those who wrote the leading medical text-books of the Middle Ages. Rufus was a Greek physician of Ephesus. Haly, Serapyon and Avycen were Arabian physicians and astronomers of the eleventh century. Razis was a Spanish Arab of the tenth century, while Avrn r os was a Moorish scholar of Morocco. Joheanes Damaocenus was likewise an Arabian physician, though of an earlier date. Constantius Afer lived at the end of the eleventh century. Bernardus Gordomus was a professor of medicine at Montpellier, and was no doubt Chaucer's contemporary. Of the others mentioned in this connection, all were physicians of the fourteenth century.

"Esy of dispense," literally translated means what should be a still more valuable and practical lesson to those of the present day, and it is simply "moderate in his expenditures"—a fault of which too few of us may be charged as being guilty.

An allusion is clearly made to the great pestilence in 1348—1349, as the same allusion is made in "Piers the Plowman," under the expression *wan* or *won*.

Translating the word *for*, we have *because seeing that gold in phisik is a cordial, therefore he loved gold in special*.

And so on for hundreds of lines this author goes on describing in his charming, simple manner all classes of people. Where in the English language can there be words brief, condensed, concisely arranged and as pointed as these few lines from Chaucer describing the "Doctour of Phisik." Every line is in itself replete, complete. It is

veritably a sermon of itself. Yet how really few of us have ever given it the time to even read it, let alone properly interpret it.

Neither last in importance nor least for consideration, he states:

For gold in phisik is a cordial
Therefore he lovede gold in special."

Leaving out of consideration the remainder of his work, forgetting all the beauties that lie hidden in the following pages, what physician is there that, picking up his work and reading the few lines here given, could but see the genius and power of the poet so clearly expressed.

In the Prologue, the poet has taken the happy April season and commences his narrative with a description of the person and characters of each member of the party, and all, even to the Doctour, is done ample justice.

It would seem that for purity of thought, beauty of expression and richness of old English, Chaucer is an author too much neglected by the student of medicine and general literature, as well. There is no one that would not be benefited in every way by reading the Prologue, Knightes' Tale and Nonne Prestes Tale from the "Canterbury Tales."

To those familiar with the works, no more need be said; to those unfamiliar, the suggestions are made, merely as a hint to search the choice gems that have been, handed down for hundreds of years.—Chas. H. Mirz, A. M., M. D., in *Cin. Lancet Clinic*.

LEUCORRHÆA: ITS CAUSES, VARIETIES AND TREATMENT.

The subject of leucorrhœa is one deserving of fuller consideration than is generally accorded to it. In a large proportion of instances the symptom that first directs attention to the ordinary forms of gynæcological disease is some abnormal mucoid exudation from the genital canal. Such symptomatic discharges are frequently so prominent a feature of those cases, or are so obscure in their causation, so intractable in their treatment, or so far-reaching in their consequences, as to occasion many of the diagnostic therapeutic difficulties encountered in this special branch of practice. It may, therefore, not be useless to review, from the standpoint of a somewhat long clinical experience, our knowledge of the general pathology of leucorrhœal complaints, their various forms, their common course, possible results, and the methods available for their treatment. In this connection no special reference need be made to those mere hypersecretions from the genital muscosa that, irrespectively of any pathological condition, may be physiologically occasioned by the local hyperæmia normally consequent on ovulation or pregnancy, or by

the menopause. The term leucorrhœa should therefore be restricted to such non-hæmorrhagic or mucoid discharges from any portion of the genital lining membrane as contain morphological or other elements foreign to healthy mucus, and that are of pathological significance.

Vulvar Leucorrhœa.—This, according to the writer's observation in the Children's Hospital, Dublin, with which he had been connected for twenty-three years, is most frequently brought under notice in pediatric practice, and more usually is of constitutional or strumous origin, although it also not unfrequently arises from topical causes, whether catarrhal or simple inflammatory traumatic or specifically infective, such as gonorrhœa. From whichever of these causes vulvar leucorrhœal discharges may arise, it too often happens that they are ignored, or not submitted to proper treatment in their early stages. The frequent result of this is the ultimate extension of the complaint to the uterus or its appendages, and hence in after years in numberless instances cases of dysmenorrhœa, sterility, endo-uterine, and tubal disease are brought under gynecological treatment that might have been obviated by due attention to the leucorrhœal troubles of early life.

Vaginal leucorrhœa may be ascribable either to any of the local exciting causes of genital hyperæmia, or to any abnormal constitutional condition by which the tonicity of the vaginal vessels is so impaired as to give rise to non-hæmorrhagic exudation therefrom. The most common of the former causes are catarrhal and simple inflammatory vaginitis; and next in frequency is gonorrhœal infection. The distinction between these is generally a matter of difficulty, or is often an impossibility in actual practice, and in many instances we must rely more on the history, symptoms, and probabilities of the case than on any differentiation from the readily ascertainable presence or absence of gonococci in the discharge. Whether specifically infective or not, however, the treatment of these cases is practically identical. In either instance our primary object should be to secure, as far as possible, the asepsis of the affected parts by the free use of warm antiseptic injections, such as lysol or boric acid (1 in 25), or corrosive sublimate (1 in 2000), so as to sterilize and cleanse the vaginal surface from the discharge which, even if not specifically infective, if allowed to accumulate or decompose, must act as a direct source of irritation, as well as a possible *nidus* for pathogenic microorganisms by which the entire genital tract may be infected. In the second place, the same indications may be carried out most effectually immediately after each douching by vaginal insufflations of loletin, salol, or boric acid powder, or so-called "dry treatment." And thirdly, the parts in the intervals between these applications should be well separated by strips of antiseptic gauze

saturated with dilute liquor plumbi, or with hazeline, the patient in the meanwhile being restricted to bed, and placed on such constitutional treatment as may be indicated in each case.

Vaginal as well as uterine leucorrhœa may, moreover, also occur, irrespectively of any recognizable local cause of irritation or hyperæmia, as the result of anæmia, chlorosis, strumous diathesis, and other general constitutional conditions, or as a direct consequence of arrested menstruation, lactation, or as a distant metastasis of gouty and rheumatic disorders, etc. In this connection the vaginal leucorrhœa of pregnancy may also be mentioned, as, although commonly it should be regarded as a physiological consequence or symptom rather than a disease of pregnancy, in some instances it assumes a more serious form, and in the latter months often give rise to most distressing pruritus of the pudendum. For the relief of this the writer would again suggest the local application of the methylene blue lotion, which he has recently recommended as one of the best of all topical analgesics in pruritic affections generally.

Cervical leucorrhœa is very frequently of special importance in connection with the causation of obstructive dysmenorrhœa and sterility, in which cases the cervical canal may be so sealed by an abnormally viscid and hyper-alkaline exudation from the Nabothian follicles and cervical endometrium as to interpose mechanical obstacles to either menstruation or conception. In our local treatment of such cases, therefore, our chief reliance should be placed on the free use of the cervical curette, before which the writer recommends the thorough dilatation of the canal by means of his rapid dilator, and then, immediately after curetting, applies iodized phenol or salol bougies to the affected surfaces. Lastly, in this, as in all other forms of chronic leucorrhœa, it is most essential that whatever topical measures are found necessary should be conjoined with these general remedies, which may be specially indicated by the constitutional state of the patient, by which such discharges are often occasioned, or to which, still more frequently, their continuance is due. In many instances of this kind a mild course of bichloride of mercury given in tincture of bark is especially serviceable. In the greater number of cases, however, chronic leucorrhœa is essentially a disease of debility, and, for its curative treatment, requires the exhibition of ferruginous tonics, as well as rest, general and local, together with suitable hygienic and dietetic measures. For a complaint so many sided in its etiology as this, it is needless to observe that there can be no special remedy. Nevertheless, in a large proportion of instances, the writer has derived more distinctly beneficial results from the long-continued employment, in small doses, of arsenical preparations or combinations such as Donovan's solution, than

any other class of medicine employed in the constitutional treatment of chronic leucorrhœal cases generally.—Abstract of paper by T. M. Madded, M.D., in *The Medical Times And Hospital Gazette*.

COLITIS.

Two correspondents have recently written to *The Lancet* asking for information on the subject of colitis. As I have seen several cases of it both during life and in the post-mortem room, and have recently collected a number from the post-mortem records of Guy's Hospital and various publications, I thought it might serve a useful purpose if I briefly drew attention to the chief varieties. Much fuller details will be given under the heading "Diseases of the Colon" in the "System of Medicine" about to be published under the editorship of Professor Allbutt. The colon is affected by a number of well understood diseases, as dysentery, tuberculosis, cancer, and anthrax, and in the post-mortem room many other extremely interesting conditions—as, for instance, follicular and distension ulcers and the forms of colitis associated with pyæmia, Bright's disease, etc.—are seen; but, apart from all these, there appear to be three forms of colitis of clinical interest, which may be termed "simple colitis," "membranous colitis," and "ulcerative colitis."

1. *Simple colitis*.—The chief symptom of this is diarrhœa. The motions contain much mucus and usually small, but sometimes large, quantities of blood, which is fluid and but little altered, having clearly come from low down in the bowel. Under the microscope unaltered red blood cells, some leucocytes, and triple phosphate crystals may be seen. Early in the case there is usually very little fæcal matter. The onset is generally sudden; the bowels may be open many times a day, and in most cases there is some abdominal pain (for the most part along the course of the colon), especially during defecation, but it is not often excruciating, nor is tenesmus very marked. Abdominal tenderness is nearly always present, chiefly over the sigmoid flexure, but it may be over the whole colon or the whole abdomen. The rectum may feel a little rough, and may be injected and covered with mucus; the tongue is covered with a white fur, but is commonly free at the edges and tip. If the case is severe the temperature is raised, and if the diarrhœa continues the patient loses weight. Flatulency, abdominal distension, loss of appetite, nausea, and vomiting may all be present, but are not commonly very striking. There is nothing noteworthy about the pulse, for its characters are the same as are usually observed in any severe abdominal disease. The cases vary much in severity, and if untreated may drag on for some time, even proving fatal. The patients are often of a

depressed, hypochondriacal turn of mind. The most important part of the treatment is to put the patient to bed, to keep him warm, and to give him only small quantities of milk at frequent intervals. Opium, bismuth, and compound catechu powders are valuable for checking the diarrhœa, but directly it appears that this is about to cease astringents should be withheld, for the subsequent constipation is often very troublesome. It is best overcome by rectal injections of glycerine or warm olive oil. The hæmorrhage is rarely severe enough to call for special treatment; probably injections of equal parts of water and liquor ferri perchloridi thrown as high up the rectum as possible are the best remedy. Milk or at the most farinaceous diet and complete rest in bed must be continued till all the symptoms have disappeared, and the longer the case has been left untreated the longer will the treatment last. If the patient die, the mucous membrane of the colon will be found to be injected, red, or even livid; the submucous tissue is swollen; an excess of mucus can be seen on the surface; and there may, in an exceptionally severe case, be a few flakes of lymph or a few minute quite superficial ulcers.

2. *Membranous colitis*.—In this disease the patient passes from the rectum whitish membranous casts of the bowel. The subjects of it are mostly women over twenty years of age; they are poor eaters, and the tongue is slightly covered with a white fur. Usually they are of a depressed melancholy turn of mind, and appear to get very little enjoyment out of life. This description applies in a well-marked case to the habitual state of health, but from time to time there are exacerbations during which all these symptoms become more severe, and in addition there is much gripping pain in the abdomen, commonly in the course of the colon, and for the most part bearing no relation to food, and there may be nausea or even actual vomiting. After this state of things has gone on for a few days the patient begins to pass membranes and often blood from the bowel; this is not clotted, and has clearly come from low down. The membranes, which some patients call "skins" and others compare to pieces of tape-worm, are greyish or yellowish white, of sufficient consistency to remain intact when held up, and they vary from being very thin to about an eighth of an inch thick. A good specimen forms a complete cast of the colon, with perhaps some fæcal matter in its interior, and may be more than a foot long; but often only shreds, which are clearly fragments of larger pieces, are present, and these may have been rolled up into a tight ball by the movements of the colon. Under the microscope the membranes are seen to be structureless and somewhat transparent, with embedded in them, a few minute pieces of undigested food, fæcal matter and some crystals, chiefly triple phosphate.

Fatty epithelial cells may also be seen, clearly suggesting by their collection together and their arrangement that they are the cast-off cells of Lieberkühn's follicles; and the inner surface of the membrane is marked by a number of pits which correspond to the mouths of these follicles. Several leucocytes may also be seen. Chemically, these membranes are albuminous. The duration of an exacerbation during which membranes are passed may be only a few days, or they may continue to be passed for several years. Some motions contain fecal matter, blood, and membrane; others contain only one or two of these three constituents. The fecal matter is usually in the form of hard scybala, and constipation is more common than diarrhoea. I have seen one fatal case. No membranes had been passed for some time before death, and the colon was thin and marked with slight patches of congestion. Otherwise the whole body was normal. Treatment is very unsatisfactory. No drugs are known to have any certain effect for good. The body and mind must be maintained in the best general health possible. The patient should take plenty of outdoor exercise of such a nature as to occupy her mind as well as her body. Her diet should be abundant and simple, but at the same time carefully prepared, so as to tempt her to eat. Often the patient imagines she cannot eat this and that, and so she becomes very fastidious. A firm attempt to break this habit must be made. She should have some definite employment to occupy her mind, and when not at work should associate with cheerful companions rather than be left alone. Purgatives are particularly to be avoided. Every attempt must be made to get the bowels to act regularly, and the patient should go to the watercloset every morning whether or not she thinks the bowels will be moved. Her meals should be regular and she should go to bed early. If the pain or diarrhoea is at all severe she had better remain in bed, and some astringent—as bismuth—may be necessary. Opiates may be required for the pain, but they should be given sparingly, lest the patient become a confirmed opium or morphia taker, and all astringents should be ordered in small quantities because of the subsequent constipation. This is best overcome by a rectal injection of warm oil or glycerine. It has been suggested that in a very intractable case it might be justifiable to open the colon high up, and by allowing the feces for some time to pass out through the artificial anus, to give it rest, and at the same time to flush it from the artificial opening to the natural anus with boracic acid lotion.

3. *Ulcerative colitis*.—This disease is about equally common in the two sexes, and the sufferers from it are usually between twenty and fifty years of age. It is ushered in by frequent attacks of pain, usually paroxysmal, severe, griping, and referred to the front of the abdomen. Between the

attacks, of which there may be several in a day, there may be a slight dull pain, or even none at all. Severe diarrhoea is another early and constant symptom, and the bowels may be open five or six or more times a day. The act of defecation is accompanied by much abdominal pain, but marked tenesmus is rare. The motions are fluid, slimy, and foul smelling; usually some fluid blood—it may even be a large quantity—is present, and a few small lumps of feces may be seen. Mucus is never present in large quantities. There may be some shreddy-looking material, very like sloughs. For a day or two between the periods of diarrhoea there may be periods of constipation, during which more solid motions are passed. Many patients, before they have been admitted to the hospital, have suffered from vomiting, but this usually ceases under dieting and careful rest. The tongue is covered with a dirty whitish fur; as the disease progresses it becomes red and dry, with a brown fur. The patient has the pinched expression often seen in abdominal disease, he is extremely anæmic, his abdomen is somewhat distended, peristaltic movements may be visible, and ulceration may occasionally be felt per rectum. As the case goes on the anæmia and weakness progress, the patient looks extremely ill, and his pulse is feeble. Generally there is irregular pyrexia during the whole of the attack, the temperature commonly ranging between 100° and 102° F. The prognosis is extremely grave—in fact, we have no convincing evidence that the disease is recoverable. The duration is usually less than eight weeks; the commonest cause of death is exhaustion, but some patients succumb directly to perforation. In this country acute dysentery is so rare that there is not likely to be much confusion between it and ulcerative colitis. The different character of the stools and prominence of tenesmus, the burning pains within the anus, and the very frequent evacuation of the bowels in dysentery would help to establish the diagnosis. The diseases that I have known to be confounded with ulcerative colitis have been phthisis, malignant disease of the colon, intestinal obstruction, and pernicious anæmia. Post-mortem examination of many cases shows that in a typical example the muscular coat is exposed by ulceration, which is often so extensive that only islets of mucous membrane are left here and there. These are often considerably swollen, and consequently they look taller than they otherwise would, and frequently they are more or less sessile because of the ulceration that undermines them. The result is that a careless observer concludes that the colon is covered with polypi. The ulcers may be very numerous, and they may run together to form large, irregular ulcerated areas, with here and there perhaps a sloughy floor. The vessels are usually dilated; it is rare to see any attempt at healing. If the

patient die early in the course of the disease the ulcers may be superficial and the mucous membrane very soft and congested. Sometimes the small intestine is affected as well as the colon, but to a less extent. Histologically the process is the same as is usually seen in chronic ulcerations. About half of the patients who die from ulcerative colitis show no disease except that of the intestine. The associated diseases which in any way suggest a special connexion are Bright's disease, gout, and hepatic abscess. Among twenty-three cases of ulcerative colitis of which I have notes of the condition of kidney, chronic interstitial nephritis was present in six, and of the remaining seventeen two had urate of soda in their joints. The association with suppuration of the liver is very rare, but probably there are two distinct varieties of it, as there are of hepatic abscesses in association with dysentery—namely, the small multiple pyemic abscess and the large solitary abscess. Treatment, unfortunately, appears to have very little effect on the disease. Absolute rest in bed, with slop diet and opium, and hot fomentations, if the pain and diarrhoea are very severe, probably afford the best chance, but the prognosis is exceedingly grave. Several cases will be found recorded in the Guy's Hospital Reports, and one showing the association with hepatic abscess—W. Hale White, M.D., F.R.C.P., Lond., in *The Lancet*.

HEALTH COMMANDMENTS.

1. Thou shalt have no other food than at meal time.
2. Thou shalt not make any pies, or put into the pastry the likeness of anything that is in the heavens above or in the earth below. Thou shalt not fail to chew it or digest it, for dyspepsia shall be visited upon the children to the third generation of them that eat pie, and long life and vigor upon those that live prudently and keep the laws of health.
3. Remember thy bread to bake it well, for he will not be kept sound that eateth his bread as dough.
4. Thou shalt not indulge sorrow or borrow anxiety in vain.
5. Six days shalt thou wash and keep thyself clean, and the seventh day thou shalt take a great bath, thou and thy son, thy daughter, and thy maidservant, and the stranger that is within thy gates. For in six days man sweats and gathers filth and bacteria enough for disease; whereupon the Lord has blessed the bath-tub and hallowed it.
6. Remember thy sitting room and bed chamber to keep them well ventilated, that thy days may be long in the land.
7. Thou shalt not eat hot biscuit—wait.
8. Thou shalt not eat thy meat fried.

9. Thou shalt not eat thy food unchewed, or highly spiced, or just before work or just after it.

10. Thou shalt not keep late hours in thy neighbor's house, nor with thy neighbor's wife, nor man servant, nor his maid servant, nor his cards, nor his glass, nor with anything that is thy neighbor's. Thus endeth the tenth commandment.—*Med. Brief.*

ZINC STERATE IN THE TREATMENT OF ATROPHIC RHINITIS.—The author, Dr. Joseph F. Gibb, discusses the nature and general management of atrophic rhinitis, and concludes by outlining the treatment pursued at the Episcopal Hospital of Philadelphia, and the results obtained in fifty four carefully selected cases. The plan of treatment consisted of cleansing sprays, followed by stimulating applications, as usually recommended in the management of atrophic troubles. The cleansing was accomplished by spraying the nostrils with an antiseptic detergent solution (Dobell's Solution), followed by applications of a hydrogen peroxide on a cotton wrapped probe if the inspissated crusts were not otherwise removed. After the membranes were entirely free from secretions they were coated with a thin layer of powdered stearate of zinc containing 25 per cent. of euophen applied by means of a powder-blower.

Stearate of zinc has an oily feel when handled and has a peculiarly strong adhesiveness to mucous surfaces, thus exerting an influence for a prolonged period when applied to them surfaces. The drug produces no unpleasant effect when used in the nose, and nearly all patients claim that its use is very agreeable. Very satisfactory results were obtained in the cases treated at the Episcopal Hospital, three or four treatments in some instances being sufficient to eliminate the disagreeable odor as well as the formation of scabs. The patients were treated twice per week, and in the interval between treatments were instructed to use a cleansing solution made from Seiler's Tablets. In a total of thirty-two cases of atrophic rhinitis that remained under observation until discharged, the shortest time being two months, the longest eighteen months, there were twenty-seven in which there was a complete disappearance of crusts and odor. The author concludes by recommending stearate of zinc as a base for carrying stimulating applications, because of its simplicity of application, its effectiveness in relieving the distressing symptoms, and the comfort that it seems to induce.—*Med. and Surg. Rep*

LEUCORRHOEA IN YOUNG UNMARRIED WOMEN.—In the treatment of leucorrhœa in young unmarried women, instances frequently occur in which the usual practice of making an examination to ascertain the condition of the pelvic viscera is so

obnoxious to the patient, or is so firmly opposed, that the physician is forced to abandon it, and have recourse to medicine.

In such cases, Dr. Slocum has learned to depend upon the specific action which cantharides appears to exercise upon the cells constituting the genital as well as the urinary system. It is probably by direct stimulation of the cell just to the point of successful resistance that the benefit is secured, as the dose is very small. Strangury, or other unpleasant symptom, has not been produced. The action of the drug has been so uniformly satisfactory that when it fails, such result forms a strong basis for suspecting the presence of something more than simple hyperemia, or mild inflammation. Lessening of the discharge is sometimes noted within five days, but in several cases of profuse discharge of four years' and longer duration, the treatment was not successful until after a month's persistent use.

The formula which has seemed the best, contains also the tincture of ferric chloride and dilute phosphoric acid. These, though probably modifying the action of the cantharides, are only adjuvants. Following is the usual form of administration :

R.—Tr. cantharides ℥ 96
 Tr. ferric chlorid. " 160
 Dilute phosphoric acid " 160
 Syr. lemon. ʒ ij.
 Aqua ʒ iv.

M. Dose.—One teaspoonful in water after meals.—*Lancet-Clintc.*

RECIPES FOR BECOMING A MEDICAL PROFESSOR.—To be rich, well connected, and have relatives among hospital and college trustees is a very good mental equipment. Have a friend who is wealthy and endows a chair for you. In Germany, be a son-in-law of a leading professor. But lately I read of the death of a German privat-docent at the ripe age of seventy-four, whom I knew when was already a privat docent, but who proved his incapacity for advancement by refusing to marry the daughter of the full chair. Write a text book while you are young and fresh. There are so many, that you can extract half a dozen and make the seventh with the aid of very little brains and much more posteriors. Operate on two alleged lacerations daily, and let no more than fifty per cent. die of septicæmia. Prove that the best place for ovaries is in a jar. Parody the great Philadelphian who makes a diagnosis before he cuts babies skulls by sawing without diagnosis. The latter is seen and heard of, the former is not. On that line there are many possibilities. Thirty years ago I was offered the place of professor of the diseases of children. I replied I could not think of accepting; I did not know enough. My friend, who was a professor, and knew all about

it, laughed and replied if he were offered a chair of nautics he would begin lecturing to-morrow. That, gentlemen, is how I became a professor of pædiatrics—only because there was no place vacant for a Columbus.—Prof. Jacobi in *Sanitary Era*.

A NEW AND SPEEDY METHOD OF DILATING A RIGID OS IN PARTURITION.—(*Amer. Jour. of Obstet.*) Dr. Farrer related two cases of rigid os, in one of which, after endeavoring vainly to relax the cervix by the aid of chloral, bromide of potassium, and morphia, followed by most persevering attempts at digital and mechanical dilatation, with and without chloroform, he applied a ten per cent. solution of cocaine preparatory to incising the edge of the os. After five minutes, on introducing the finger as a guide to the scissors, the os was found widely dilated. In the second case, which, like the first, was that of a primipara (age 48), where no dilatation occurred, although the same means as were tried in the first case were used, he waited three days and then applied the cocaine. In four minutes the os was found to have yielded. He considered the dilatation to be due to the cocaine in both cases.

IMPACTED FISH BONES.—The difficulty of removing fish bones and similar obstructions, impacted at the lower end of the œsophagus, is well known, and various mechanical measures and appliances have been invented to deal with the difficulty. One of the most simple, however, and it reported one of the most effectual, in the case of impaction of such foreign bodies, is to administer to the patient a pint of milk, and forty minutes afterward an emetic of sulphate of zinc. The fluid easily passes the obstruction, and is, of course, rapidly coagulated in the stomach into a more or less solid mass, which, on being ejected, forces the obstruction before it, and so effects its removal.—*Med. Times*.

PURULENT INFECTION IN THE LYING-IN PERIOD.—Intra-uterine injections of iodine; if the temperature does not fall, curetting, or at first simple swabbing out of the uterus. As much nourishment as possible, with alcoholic drinks. Quinine, 15 grs. in two doses, morning and evening, increasing to 1.50 grammes (23 grains), but not exceeding 31 grs. in twenty-four hours. Cold ablutions; wet cloths on the head, stomach and thighs; wet packs, or cold baths. When temperature exceeds 101.4 degrees F. no cold baths.—Professor Tarnier, in *Med. T. and H. G.*

A GOOD EXAMPLE.—The City of Sydney, Australia, says the *Boston Med. and Surg. Jour.*, has imposed a fine of one pound sterling upon any person convicted of spitting upon the floor of public buildings or upon the street.

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TORONTO, MAY, 1895.

Editorial.

PHYSICAL CULTURE FOR YOUNG GIRLS.

It goes without saying that young girls are suffering very greatly from the lack of physical culture, physical exercise. A half century ago, if we can trust to the literature of the time, we would have seldom met a girl in her years of development who suffered from disturbed menstrual function, dysmenorrhœa, amenorrhœa, menorrhœa, etc. Such were exceedingly rare. Girls commenced to menstruate, usually late, and continued without the slightest disturbance or apprehension. Now we are continually confronted with amenorrhœa or dysmenorrhœa, and young girls are put under treatment early in life. Emmenagogues innumerable are utilized without much benefit. Many of these drugs, such as ergot, viburnum, hydrastis, aloes and the like, which often give temporary relief, are of very little permanent benefit. Girls are constantly taken to the physician for treatment, and temporary relief usually is obtained, which stops the anguish and trouble for a month or so. Constipation is relieved, digestion is improved, habits are corrected, but a permanent relief is lacking. This is particularly true in daughters of families who are in good circumstances. What is the trouble, and what is the remedy? We think the trouble is easily diagnosed. They have not had the benefit of physical

labor and outdoor exercise. They have been kept in the parlor, at school, or in society since they were eight or ten years of age. The mental training has been entirely out of proportion to physical labor. Their parents have been too anxious to show how skilled they are in the use of the piano, violin, guitar, etc. They are kept daily at their mental toil until they are twelve or fourteen years of age, when they are prepared for society, practically cultured under the modern rule. They are hence beautiful bundles of nerves, physical wrecks, but perfect ladies under the common acceptation of the term. At sixteen they are in a state of physical decay.

This picture may be considered overdrawn, but compare, if you will, the girl of to-day with the girl of fifty years ago, who had enjoyed all the exuberance of physical life, who had been allowed to romp as a child until she was sixteen years of age, out of doors and in. In other words, the girl had led a "go-as-you-please" life, so far as physical exercise is concerned—a regular tomboy, if you please. Such girls were, in fact, physically and mentally perfect, and reached the age of womanhood without even any knowledge of it, and passed through life as they should, in comparatively perfect health.

We have what we call educators in physical culture, we have massage, so called, and we have everything at our hand, in large cities, especially, to accomplish apparently what was accomplished in the girl of a half century ago; but it will not work in practice while it is all apparently very nice in theory.

What change should we advise in our mode of caring for the present generation of young girls? There is but one way out of the difficulty, which is to habituate the young girls to all the exercises of the boys, such as baseball, football, boxing gloves, foot-racing, jumping, gymnastic exercises, thus relieving them of every restraint practiced to-day. Remove corsets and keep the girls out of so-called society, out of the parlor and away from the piano until they are fairly well developed, discard medicine for physical exercise and physical labor, and we will have a more perfect young lady. Regularly prescribed physical training is a failure to a great degree. What is needed is more freedom of enjoyment and exercise, more play and less restrained exercise.

MILK, BOILED OR UNBOILED.

The heated term will soon be upon us, with its usual crop of infantile troubles. As these chiefly have to do with the alimentary tract, and as either poor quality of food, or injudicious feeding is responsible in the great majority of cases for the lighting up of the trouble, the question of the milk supplied as food, is a most important one. It would be supposed that experience would have taught mankind whether cooked or uncooked milk is best as a food; but this we find is not the case. Science is called upon to show which is preferable, and even scientific men, who have undertaken the investigation of this subject, fraught with importance to so large a proportion of the infantile population, have not been unanimous in their findings. Some say that Mother Nature knows what she is about, and that the article as it flows from Nature's font is assuredly the best. So it is for the calf, colt, lamb, or infant, if it sucks its own mother; but when that is not possible, and cow's milk has to be used for the young of the human species then practical and everyday experience shows that when boiled it is not only more easily digested, but that it has a nutritive value quite equal to the raw article.

Experiments undertaken by Dr. C. Chamouin, first with kittens and afterwards with infants, showed after exhaustive and repeated trials that the kittens fed on boiled milk were "twice again as fat" as those supplied with the raw milk; and that the boiling of milk is the means of preventing the loss of innumerable lives by gastro-intestinal disease.

We hear much of the sterilization of milk, and various more or less cumbrous processes have been suggested for the purpose. While, however, such processes are easily carried out in laboratories and institutions properly equipped for such operations, the trouble is to get it done in the ordinary household, with the ordinary means and intelligence at hand. Now, milk boiled *properly* is certainly sterile, so far as infectious disease germs are concerned.

Not only so, but it is more easily digested and agrees with a far greater percentage of cases than does unboiled milk. There is ample authority for the above view of the case, but certain points must be attended to, else the results will not be so fav-

orable. Firstly, all the vessels in which the milk is carried, boiled, and afterwards kept must be *scrupulously clean*. Nothing else but absolute freedom from dirt will suffice. Then it should never be boiled in an open vessel. This should have a close cover.

Lastly, it need not be kept at 212° F. for more than 20 minutes. This is sufficient to sterilize and cook it, and no further boiling is necessary.

In instructions issued by the chief of the Bureau of Animal Industries at Washington, regarding sterilization of milk, the nurse is warned not to allow the temperature to exceed 155° F. It is asserted that if it exceed 155° F. "the taste and quality of the milk are likely to be adversely affected." While not wishing to detract from the importance of these instructions, we say again that in ordinary every day practice from house to house, they will not be carried out, and we shall have better results if our orders are such as may always be obeyed. Therefore the simple boiled milk must, we think, for the present at any rate, take the place of the sterilized or Pasteurized product.

DANGERS IN THE USE OF ANTI-TOXINE.

While the use of antitoxine has come into vogue on every hand in the treatment of diphtheria, it is not without its sturdy opponents, who claim that the cases which recover, do so in spite of the so-called "specific treatment."

Dr. J. T. Armstrong, of New York, brings several objections to its use, and quotes good authority.

In a paper (*Archives de Méd. Exp.*, 1892) Dr. G. Darenberg stated that his experiments showed that, while the serum of an animal of one species did not destroy the red corpuscles of an animal of the same species, it rapidly proved destructive to those of a different species. If warmed to from 122° to 140° F., or exposed to the light for several days, the serum lost this globulicidal power.

G. Hayem, in his monograph on "The Blood," states that the serum of the ox more or less profoundly changes the blood of the dog, producing in it small emboli that may involve the functions of organs, or even life itself. Microscopically,

these emboli consist of degenerated elements of the blood. He specifically states that horse's serum produces phenomena similar to those caused by ox's serum. He further states that the urine is habitually suppressed and the kidneys are congested.

The tendency of an alien serum to produce emboli has also been noted by C. Lazet (*La France Méd.*, 1891), who found that if the serum of a dog was mixed with the blood of a man, or *vice versa*, there were produced more or less pronounced alterations, and solid concretions were formed from the changed elements.

J. T. Armstrong, of New York, believes that it was this tendency of alien serum to form emboli that caused the death of at least one patient in Brooklyn, and draws attention to the fact that the toxic influence of serum, *per se*, explains all the unusual and untoward symptoms that have been observed in diphtheria patients treated by antitoxine serum.

The *post-mortem* lesions found in the five-year old child whose clinical history is reported in the *British Medical Journal* for March 30th, correspond throughout with those observed by Hayem in dogs that died from the effects of alien serum injections.

Empiricism that has bacteriology as its sole foundation is as condemnable as any other form of that cult, and, as prognosis is not yet a lost art, it seems absurd to use antitoxine in every case where a patient's nasal or faucial secretions contain questionable micro-organisms. There are many recorded instances of these bacilli (*Klebs Loeffler*) being found in perfectly healthy persons, and there are not wanting authenticated histories of cases where the bacillus was absent, although the disease ran a typical course, even to the subsequent paralysis.

TRINITY MEDICAL ALUMNI ASSOCIATION.

Convocation Hall, Trinity University, was the scene of the first part of the third annual meeting of Trinity Alumni Association, where on Thursday, April 4th, a large number of graduates and undergraduates of old Trinity, as well as a goodly number of invited guests, gathered to listen to papers by Professor Roswell Park, of Buffalo,

Professor A. H. Ferguson, of Chicago, Dr. Daniel Clark and Dr. Chas. Sheard, of Toronto, and Dr. Joseph Price, of Philadelphia.

These papers, with the exception of that of Dr. Park, will appear in our columns, and need not be further referred to in this place. Dr. Park's paper is a part of a work now in preparation, and cannot, therefore, be published out of its proper setting. The only regrettable thing in the whole of the proceedings was that the very interesting papers of Drs. Ferguson and Park were not discussed, owing to want of time. The whole *Seance* was a great success; old friends meeting and renewing their acquaintanceship, and, to judge from the "wreathed smiles"—on their faces, we mean—their youth, at the same time.

To the President, Dr. Geo. A. Bingham, of Toronto, as well as to his assistants, Trinity graduates owe a debt of gratitude for the energetic manner in which the affair was carried through, making it, as they did, the best, by far, of the meetings so far held.

In the evening a banquet was held at the Rossin House, to which over one hundred sat down. Speeches, burning with eloquence and loyalty to Trinity, were the order of the evening. The President of the Association was particularly felicitous in his remarks, and he was ably seconded by Dr. Geikie and Dr. Temple.

Another feature of the evening were short addresses by representatives of each year from 1873 down to the present. Dr. McKay, M.P.P., of Ingersoll, the new President of the Association, was the oldest representative present. We hope this organization, now so well and lustily started, may continue to grow, and extend its influence far and wide for the glory of Trinity.

MEDICAL EXAMINATIONS.

M'GILL UNIVERSITY.

Final Examination for M.D., C.M.—C. C. Alexander, Fredericton, N.B.; J. H. Allen, B.A., West Osgoode, Ont.; D. P. Anderson, B.A., New Liverpool, Que.; X. Lanthony, Berwick, N.S.; J. W. Bailey, B.A., Northfield, Minn.; J. T. Basken, Dunrobin, Ont.; E. D. Beatty, Nepean, Que.; C. W. Bishop, Montreal; T. H. Blow, South Mountain, Ont.; R. B. Boucher, Peterboro', Ont.; C. W. Bouck, Inkerman, Ont.; H.

J. Chapman, Port Elgin, N.B.; M. E. Commins, B.A., St. Stephens, N.B.; W. Cowie, B.A., Montreal; A. Cruickshank, Inverness, Que.; J. L. Day, B.A., Montreal; W. L. Ellis, St. John, N.B.; W. A. Feader, Iroquois, Ont.; J. W. Flynn, Montreal; C. H. Fox, Oxley, Ont.; C. J. St. Gallant, Charlottetown, P.E.I.; J. H. Gleason, Cowansville, Que.; J. P. Grant, New Glasgow, N.S.; A. Gun, Durham, Ont.; R. Hamilton, Bright, Ont.; J. L. Hargrave, B.A., Rosedale; R. Del Harwood, Vaudreuil, Que.; L. Hogg, B.A., London, Ont.; J. Hogle, Montreal; R. A. Kerry, Montreal; J. H. King, Chipman, N.B.; H. T. Knapp, B.A., Sackville, N.B.; M. Lanterman, Montreal; A. A. McLeay, B.A., Danville, Que.; G. F. May, Montreal; J. H. Merrick, Merrickville, Ont.; N. McKinnon, Parkhill; G. J. McNally, Upper Kingsclear, N.B.; R. W. Neil, Aylmer; W. Oliver, B.A., Rockburn; B. S. Price, King's County, N.B.; D. D. Quay, Port Hope; W. S. Reilly, Ottawa; J. E. Robertson, Morrisburg; E. H. Sanders, Woodstock; H. M. Shaw, Berwick; C. W. Vipond, Montreal; D. F. Walker, Huntingdon; J. H. Watson, Barbados; W. W. Wickham, Summerside, P.E.I.; J. A. Williams, Carleton Place; D. M. Wood, Kenmore; H. K. Wright, Montreal.

Honors, Medals, and Prizes.—The Holmes medal to William A. Feader, Iroquois, Ont.; the final prize to William G. Reilly, Ottawa, Ont.; the primary prize to Campbell B. Keenan, Ottawa, Ont.; the Sutherland medal to Campbell B. Keenan, Ottawa, Ont.; the Clemesha prize to William W. Wickham, Summerside, P.E.I.

TRINITY MEDICAL COLLEGE.

Final Fellowship Degree.—Certificates of Honor; 75 per cent. and over on the total.

Candidates who obtained 75 per cent. and over.—Frederick Parker, Alex. C. Lambert, James C. Hutchison, Charles A. Drummond, J. G. Lamont, Robert J. Walker, H. George Pickard, Henry McC. Featherstone. 70 per cent. and over.—Frederick C. Harris, Henry E. Tremayne, Malcolm McKinnon, Rowland T. S. Gilmore, George Elliott, John H. Ferguson, Vaux Francis Leonard, Robert Wm. Shaw, Joseph D. Monteith, Alexander McKay, Henry C. Pearson, T. H. Sneath. 60 per cent. and over.—Christopher G. Johnson, Frank S. Rounthwaite, Donald Albert Cameron, John A. Kerr, Frank McLennan, Daniel W. Shier, James D. McKay, David D. Duggan, Frederick W. Whiting, George W. Brown, Ira A. Tripp, John Albert Cook, Arthur A. Milligan. Passed.—Wm. James Burden, Wm. T. Clemes, George F. Pierce, Harry R. Pearce, C. Lambert, B. Stammers, Apollos F. Phillips, Hugh A. Stevenson, James R. Durham.

Dr. Sheard's prize in physiology for the first year, H. A. Johnston.

Scholarships.—First year: 1st, \$50, E. Shoemaker; 2nd, \$30, R. G. McConochie; 3rd, \$20, H. A. Johnston. Second year: 1st, \$50, J. S. McEachren; 2nd, \$50, Geo. Cairnes.

Medals.—The Gold Medal, Frederick Parker. 1st Silver Medal, Alexander Lambert; 2nd, Jas. C. Hutchison.

TRINITY UNIVERSITY.

Final Examination for M.D., C.M.—Gold medal and certificates of honor—F. Parker.

Silver medal and certificate of honor—J. C. Hutchison.

Certificates of Honor.—J. G. Lamont, A. C. Lambert, F. L. Vaux, F. G. Wallbridge, F. W. Whiting, F. C. Harris.

The following are also in Class I.—J. H. Ratz, G. Elliott, Miss M. E. Allen and H. E. Tremayne, equal; J. D. Monteith, C. A. Drummond, D. W. Shier, D. A. Cameron, and T. B. Hewson, equal; R. T. S. Gilmore, J. F. Battell.

Class II.—J. N. Hutchison and H. G. Pickard, equal; W. Brown and A. Mackay, equal; H. M. Featherstone, M. M. McKinnon, W. J. Burden, J. A. Cook, H. S. Krug, and R. W. Shaw, and T. H. Sneath, equal; F. McLennan, W. T. Clemes, J. A. Kerr, Miss M. Symmington, G. W. Brown, and J. H. Ferguson, equal; J. A. Trip, J. B. Leeson, and D. W. McPherson, equal; R. J. Walker, J. R. Durham, and H. Paine, equal; C. G. Johnson, and J. D. McKay, and H. E. Wallace, equal; H. C. Pearson, W. G. McKechnie.

Class III.—F. S. Rounthwaite, Miss E. Hurdon, D. D. Duggan, G. W. Hall, F. G. Grosett, and A. A. Milligan, and W. B. McKechnie, equal; H. A. Stevenson and J. Menzies, equal; J. W. Routledge, T. W. Kirby, Miss M. MacMillan and A. F. Phillips, and J. F. Drain, equal; J. W. Mehan, Miss D. Macklin, J. A. Malloy, A. W. Aiken, W. D. McNab, Miss R. Pringle.

In the primary the first silver medal was taken by J. S. McEachren, and the second by G. Cairnes.

THE WOMEN'S MEDICAL COLLEGE.

Diplomas.—Misses M. E. Allen, Fordwich; E. Hurdon, Toronto; D. M. M. Macklin, Stratford; M. L. Macmillan, Toronto; R. Pringle, Fergus; M. P. Symington, Brighton.

Some of the students went up for Trinity College examinations, with the following results:

Degree of M.D.C.M.—Miss M. E. Allen, with first-class honors; Miss M. P. Symington, with second-class honors; Miss S. Hurdon, Miss D. M. M. Macklin, Miss Margaret L. Macmillan, Miss R. Pringle.

A FEW POINTS IN OBSTETRICS.—No branch of a physician's practice requires more self-poise, where so many complications arise, commanding our sympathy and demanding our skill, than that of obstetrics, and when disease and death follow a normal case of labor, the cause can be traced to none other than to ignorance or mismanagement, *Med. Rev.*

With these preliminary remarks, Ewing advances a few aphorisms relating to obstetrics.

1. Examine the urine a week or so before the expected confinement. Albumin need not cause alarm, unless present in large quantity, in which case the woman should be restricted to milk diet, given one-tenth grain of sulphate sparteine four times a day, and bowels kept open with cream of tartar, the object being, of course, to relieve congestion of the renal veins.

2. Make no digital examination without first cleansing the hands and nails, together with the external genitals, with a solution of bichloride of mercury (1 to 2,000) and ethereal soap.

3. Empty the rectum thoroughly with an injection of warm water.

4. Make as few examinations as possible during progress of labor, and each time dip the hand first in the antiseptic solution.

5. If the presenting part emerges slowly from the womb, do not allow your impatience to so get the better of your judgment as to induce you to "assist nature" by pulling upon the os. Probably all the deep pathological tears, calling for surgical interference, found on the right and upper anterior sides of the cervix, are caused by the finger of the accoucheur.

CONCEPTION.—The menstrual cycle, if it may be so termed, consisting of 28 days, usually, and embracing time of menstrual flux and intervening days, may be divided into two periods, viz., a genetic and an agnetic period. *Med. Brief.* The genetic period embraces the first 18 days of the menstrual cycle. During this period conception is most likely to occur. If conception occurs within the first third of this period, the parental vigor being equal or nearly so, the child will be a girl; but if conception occurs within the last third the child will be a boy. Within the second third, the earlier or later the period in which conception occurs will govern the sex approxi-

mately. The agnetic period embraces from the 19th day to the close of the menstrual cycle. Within this period conception rarely occurs.

IN the after-treatment of a case where an operation for the relief of an impermeable occlusion of the œsophagus of five years standing had been performed, which operation was reported at length in the *N. Y. Med. Jour.*, of March 23rd, 1895, Dr. Augustus C. Bernays, A.M., M.D., Heidelberg, M.R.C.S. Eng., Professor of Anatomy and Clinical Surgery at the Marion-Sims College of Medicine, the operating surgeon, says: "The patient rallied fairly well after the operation, but she became greatly emaciated. Liquid food was given at short intervals and stimulants as indications demanded. In order to allay the extreme nervousness and irritability, antikamnia was given and it acted promptly and satisfactorily in every instance." Of the further history of the case it may be stated that on the seventh day after operation, the patient took into her stomach through the natural channel the first food which had passed it in five years; and that in two months convalescence was regarded as fully established.

ANTISEPTIC POWDER.—The *N. Y. Med. Jour.* gives the following:

R—Hydrarg. chlorid. corros. . . . gr. 1-5.
 Ac. borici. ʒi.
 Ac. tannici. gr. x.
 Sacch. lactis. ad ʒiii.

Mix sublimate gradually and thoroughly with the sugar, then add the rest. Useful where iodoform is usually employed.

TO LUBRICATE CATHETERS.—The Paris correspondent of the *Lancet* says that Professor Guyon, of the Necker Hospital, uses the following formula, *Virginia Med. Monthly*:

R—Bichloride of mercury . . . gr. j.
 Glycerin } āā ʒij.
 Water }
 Powered soap ʒiv.—M.

This ointment is claimed to be unirritating to the urethra, and to possess greater lubricating power than either oil or glycerin.

DIABETES.—In *Gazette Degli Ospitali*, Doctor Leoni reports great satisfaction from the use of Jambul. He declares that the drug contains an active principle which, while not specific, is yet capable of neutralizing the diabetic process in individual cases.

ERROR IN OUR LAST ISSUE.—We regret that by an error in our last number, Dr. G. R. McDonagh was credited with having contributed an article on "Emphysema of the Maxillary Sinus," which was written by Dr. D. J. Gibb Wishart, of Toronto.

BLAUD PILL CAPSULES (D. F. & Co.). The profession will be glad to note, by announcement on page 267, that Messrs. Duncan, Flockhart & Co., of Edinburgh, have established a depot in Toronto for their famous capsules. Concerning these capsules there seems to be but one opinion in the medical world, that they are the most reliable preparation of this valuable formula available to the profession. The London *Lancet* says: "The administration of nauseous as well as unstable drugs in the form of flexible and soluble Gelatine Capsules has found favor with many, and a well-known firm like Messrs. Duncan, Flockhart & Co. is sure to devote great care in the preparation of medicaments of this kind. An illustration of this is afforded in the case of the Blaud Pill Capsule, which, of course, should contain, as far as is possible, the iron in the proto or ferrous condition. On examining a capsule made by this firm, and said to contain the equivalent of three pills, we found that of the total amount of iron present 92 per cent. was in the form of preto-carbonate."

Books and Pamphlets.

DOSE-BOOK AND MANUAL OF PRESCRIPTION-WRITING, with a list of the official drugs and preparations and also many of the newer remedies now frequently used, with their doses. By E. Q. Thornton, M.D., Ph.G., Demonstrator of Therapeutics, Jefferson Medical College, Philadelphia; Assistant Surgeon, United States Marine Hospital Service. Philadelphia: W. B. Saunderson. Toronto: Carveth & Co.

To the busy practitioner the Manual of Prescription-Writing should be very serviceable. It is a small, well written volume, neatly bound in cloth, and easily carried in the pocket, and is an excellent book to have while travelling, as it gives, in a brief space, a vast amount of information regarding the correct writing of a prescription. It gives briefly and alphabetically, a description of the official and officinal drugs and preparations now in use, with the dose of each. It also treats of the Solubilities and Incompatibilities, Weights and Measures, and the most ready and easy way of administering medicine. In all it is a book worthy the careful study of the student as well as that of the general practitioner, who wishes to gain the

greatest amount of information by the smallest amount of reading.

FUNK AND WAGNALL'S STANDARD DICTIONARY OF THE ENGLISH LANGUAGE.

We have received the second volume of this magnificent work. It would be impossible in any ordinary review to give a tithe of the good points of the book. It is a book for all people, comprehensive, not overly bulky or verbose, up to date, containing all the new words which the past few years have introduced into our language, in Electricity, Medicine and other Sciences, and many words and phrases which we would not know where else to look for.

One thing we notice with pleasure, viz., the tendency towards the simplification of spelling as in the diphthongs "æ" and "œ" being replaced by "e" in words considered as fully anglicized. On the other hand "sulfur" "quinin" look barbarous to our unaccustomed eyes, though adopted by the Chemical Section of the American Association for the Advancement of Science. No further commendation is needed than our saying that it fills in every sense our ideal of what a dictionary should be.

MANUAL OF GENERAL MEDICINAL TECHNOLOGY, AND PRESCRIPTION WRITING. By Edward Curtis, A.M., M.D., Emeritus Professor of Materia Medica, etc., College of Physicians and Surgeons, Columbia College, New York City. 3rd edition; pp. 235. New York: Wm. Wood & Co. 1895.

This very handy and pleasingly gotten up little volume contains in short space much that every student in medicine and pharmacy should know, and would be of distinct advantage either alone or as supplementary to Pereira's or Griffith's handbook. It is divided into Part I, Technology of Medicines, and Part II, Technology of Medicating. The former has, as sub-divisions, such subjects as: The Authority for Medicines, The Naming of Medicines, Forms of Medicines, Determining of Quantities of Medicines, Prescribing of Medicines. Part II, has chapters on Modes of Medicating, Dosage, and an Appendix. It seems to be the result of much thought and experience as a teacher in medicine.

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