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EDITORIAL

CHRISTIAN SCIENCE AGAIN.

We might not have returned to this subject so soon but for the boldness of this cult of late. Scientists have been putting forth some very remarkable claims for this spurious system of religion and insane system of healing.

Mr. Frank Bell, C.S., of Harrisburg, Penn., delivered a lecture on Christian science in Toronto recently. Among other things he is reported as saying that Christian science takes the fear out of business, thereby removing a prime factor of failure. Then he went on to state that a sound body and a clear head were important assets to one. He then further said that it was essential to remember that clean thoughts and good health were synomymons. Sickness, disease and death were the results of ignorance and erroneous thoughts.

Then recently there was in Toronto a Mr. Walton Hubbard, C.S.B., of Spokane, Wash. He also contended that Christian science was a great aid to business. One paper reported him as saying: "Christian science has brought many prosperous business conditions where before there had been business failures." Then, further, he was reported as saying: "Man is the perfect idea of God, and as an idea of God he has no volition of his own." But he also was reported as saying: "Investigation proves that all sickness is mental, that is, it is sick thought made manifest in the body; and when we are well it is well thought which is made manifest on the body."

This is enough to show what a fool's castle these people live in. Anyone knows or ought to know that a sound mind in a sound body are great assets. In this there is no difference of opinion, and was a recognized truth long, long before the days of Mrs. Eddy.

But when Mr. Frank Bell tells us that clean thoughts and good health are synonymous we must beg to differ. Some of the most saintly per-

sons the world has ever known have been great suffereers from some sort of disease. This whole teaching is contrary to all experience and absolutely opposed to the doctrines of Scripture.

What language can we employ to characterize the teachings of Mr. Hubbard that man has no volition of his own? This is pure nonsense. Man can and does act of his own volition, and it is this very quality that makes him a responsible being, and confers upon him the power of progress. This is just what the Christian scientist does when he tries to heal anyone.

In the latest edition of *Science and Health* by Mrs. Eddy, on page 7, line 23, we read: "God is not influenced by man. The 'divine ear' is not an auditory nerve." There is a good deal more of such stuff in the chapter on "Prayer."

On page 147, at line 24, we find a splendid example of Mrs. Eddy's egotism. After saying that our Master healed the sick, and practised Christian science healing, Mrs. Eddy goes on to state that He left no definite rule. With an assumption to be found nowhere else than in the writings of Mrs. Eddy she says: "This remained to be discovered by Christian science." On page 150, at line 31, we meet with this: "The hosts of Æsculapius are flooding the world with diseases, because they are ignorant that the human mind and body are myths." So it would follow from this that Jenner, Pasteur, Sydenham, Rush, Morgagni, Flexner, etc., have been veritable evil geniuses on the earth and curses to humanity, because they were not crazy like Mrs. Eddy, and believed that the body was a myth. What of poor William Harvey, who discovered the circulation of this "myth!"

How would the following help one in business, or enable him to go to his office with a carbuncle on his neck? Page 153, line 16, this appears: "You say a boil is painful; but that is impossible, for matter without mind is not painful. The boil simply manifests, through inflammation and swelling, a belief in pain, and this belief is called a boil." If a man with a carbuncle acted on this opinion, it would more than likely cost him his life, and not save his business.

But as an aid to business just take the following, found on page 155, line 8: "The chemist, the botanist, the druggist, the doctor, and the nurse equip the medicine with their faith, and the beliefs which are in the majority rule." So the active qualities of strychnine, morphine, etc., are in these drugs because the majority think they are there. This would be a marvellous way of conducting business. We would suggest that the majority just think that whiskey is endowed with nutrient qualities greater than milk, and, presto, the temperance question is solved!

As an aid to business let us take the following from page 179, line 21: "Treatises on anatomy, physiology and health, sustained by what is termed material law, are promoters of sickness and disease." So that to be ignorant of the contagiousness of smallpox, of the danger of a swamp swarming with anopheles, to sleep in a bed along with the typhus fever carrying bug, would be quite the proper thing, according to Mrs. Eddy. That Mrs. Eddy was crazy is no great wonder, for others have been crazy; but the wonder is that so many others accept her ravings is really a modern wonder. It is truly stranger than the dancing mania of the middle ages.

This is the sort of thing that desires the right to practise the healing of disease in Ontario; but only by silent mental influence!

OSTEOPATHY.

While dealing with medical teratology, or monstrosities, let us look a little further into osteopathy. This, so-called, system was founded by Andrew Taylor Still in 1875. The views of the founder would not stand careful examination for a moment. We purpose on the present occasion, however, to lay before our readers the views of Charles H. Murray, who writes a number of books for the osteopaths. The book we shall take our quotations from is that called "Practice of Osteopathy."

Let us take "Æstivo-autumnal Fever." Here is what should be done for this fever, which the author calls "Bilious remittent and typho-malarial": "The treatment should be a general one (see general treatment), paying considerable attention to the upper lumbar region and the entire dorsal. Treat two or three times per day until the patient is much better; then once or twice a week for a while." So the poor victim of this troublesome fever is to have his spinal column rubbed and twisted as the means of ridding his system of a very uncomfortable form of infection.

As our second disease we take Typhoid Fever. Here is what Murray says should be done: "Osteopathic treatment may be administered with very gratifying results. If begun early the fever may often be aborted. If it is begun later the disease shows favorable symptoms immediately. The musculature of the back should be thoroughly but gently loosened. The spine may be gently sprung from the lower part to between the shoulders. The tissues of the neck must be relaxed and treatment administered to the suboccipital fossæ, just beneath the skull, either side of the spine. Work in the lower part of the back helps to regain control of the circulation in the abdomen, where the typhoid bacilli are at

work. There must be no manipulation of the abdomen. This treatment or a portion of it may be given two or three times per day with great benefit to the patient." So it appears that the sufferer from typhoid fever is to be tormented, yea, tortured, by having his spine rubbed and pulled and twisted, that the circulation of the abdomen may be improved!

As our third disease we take "Cerebro-spinal Fever." After giving a few general directions about treatment, the author lays down this: "The patient may be greatly benefited and the course of the disease shortened, with the prevention of the usual bad after-effects, by thoroughly, gently and persistently loosening the musculature of the neck, and especially of the back of the neck. The abdomen may be thoroughly treated. It will draw the blood away from the congested spine and spinal coverings." This is the sort of treatment that is advised for the victim of this terrible disease. It should be made criminal to permit such being done.

We now come to Pneumonia, that stands so high on all mortality lists. This is what C. H. Murray has to say: "The patient may be turned on the sound side and a very thorough relaxing treatment be given to all the muscles of the back, particularly on the affected side. The spine should be worked upon and sprung from one end to the other.. When this is accomplished, turn the patient on the back and treat the neck, both front and back, for the purpose of relaxing all the tissues, both deep and superficial. Raise the clavicles. Depress the ribs. Treat in the suboccipital fossæ for the purpose of reducing the fever. Raise the ribs on both sides. Give a thorough abdominal treatment. This helps to draw the blood away from the lungs." That such views and practice should exist in any civilized country is almost inconceivable. Any person so treated should have legal redress.

But the weird and dangerous whirl of treatment goes on. Let us turn now to Diphtheria. Here we have the very words: "Osteopathic treatment is very successfully given in this disease. The tissues of the neck, both front and back, should be kept thoroughly loosened. The clavicles should be raised. The first ribs should be depressed. Relax the tissues back of and beneath the clavicles. This work should stop the growth of the membrane and loosen that already formed. The thumb should relax the tissues in front of the transverse processes of the vertebræ in the neck and the cervical sympathetic gunglia should be stimulated." That any child should be subjected to such treatment ought to be sternly prohibited by law.

But for the culmination of abomination let us quote the following on the treatment of peritonitis: "The treatment calls for relaxation of

all the spinal tissues, with inhibition in the lower dorsal and upper lumbar region. Give a careful abdominal treatment." For this latter directions are given by referring to Nos. 94, 103 and 67, where the methods are laid down. In rule 94 directions are given for the manipulation of the abdominal mucles, and the raising of the ribs.

This crudity asks permission to treat disease in Ontario. Has reason left her throne! It should be made a statutory offence for anyone to set himself up as practising such a system. It should also be the law of the land that anyone who designates himself as an osteopath would be assumed as giving his adherence to the dangerous methods of treatment already stated, and, no matter what his qualifications from an academic standpiont, he should at once be disqualified.

CHIROPRAXY.

Mr. Augustus S. Downing, Assistant Commissioner for Higher Education in the State of New York, said before Mr. Justice Hodgins, Medical Commissioner: "Chiropractic is simply an off-shoot of osteopathy, and offers opportunity to uneducated men and women to practise chiropractic. They simply commercialize the ignorance of the people who are suffering from some ailment."

Dr. Maurice J.Lewi, speaking before the Honorable Commissioner, said: "I am told that the people who are practising chiropraxy are in the main those who are seeking a short cut to the practise of osteopathy under a different name, that the basis of their theory of the origin of disease is just a mild diversion or deviation from the original definition of osteopathy."

Mr. Abraham Flexner said: "My own conviction is that osteopathy, chiropractors and similar practitioners ought simply and summarily to be denied the right to practise medicine; for there is no such thing as a science of osteopathy." Then he went on to say: "The chiropractors I consider to be on a lower level still. They were so close to utter quackery that I did not even include them in detail in my report."

If it is necessary to oppose osteopathy, it is equally necessary to oppose chiropraxy. It is quackery in the worst possible form. To attempt to treat pelvic diseases by manipulations of the spinal column is to do violent injustice to the patient; and this no one should be permitted to systematically do, or have the right to do. That such practitioners should be allowed to overrun this Province is a disgrace to our laws. Means must now be found to curtail this evil.

AN APPEAL TO THE MEDICAL PROFESSION.

We have tried to show the terrible fallacies that lurk under the various systems of healing now seeking recognition in Ontario. Some of these are putting up a plea on the grounds of vested rights. Because a certain judge some years ago said that if one did not use drugs he did not practise medicine, these irregulars have settled throughout the Province and cannot be controlled by the Medical Council, because of the said judgment. But in the meantime they go on and are claiming vested rights.

At an early date the medical laws of Ontario shall be thrown into the melting-pot, and it is the duty of every practitioner to take a keen interest in what is going on. For fifty years the medical profession of Ontario has been endeavoring to build up a high standard of medical education. Shall it now stand idly by and see that standard lowered? Shall it, without a strong protest, permit such spurious "healers" as Christian scientists, osteopaths and chiropractors to secure legal status for their methods that are the very antithesis of science and progress?

We appeal, and we feel sure that we do not appeal in vain, to the regular medical practitioners of Ontario to look into this matter without delay. Let us not be taken unprepared. We owe a duty to ourselves and we owe a duty to the public. The highest function of all law is that of protection. Restraint and punishment are much less important. It is therefore obligatory to protect the people. Overwhelming evidence has been submitted that these systems are a menace to the people as real as that arising from the most dangerous form of disease. To allow these systems to treat typhoid fever, diphtheria, peritonitis and pneumonia after the methods we have set forth, is equally criminal with taking no steps to arrest the spread of smallpox, or that of not isolating a patient ill with the plague. We may not again have the opportunity of addressing our readers before action must be taken. Now is the day, now is the hour; act, act in the living present. May success attend your efforts!

THE SEASON'S GREETINGS.

The editors of *The Canada Lancet* wish their readers a most happy and prosperous New Year, and many returns. Readers can render the editors much assistance by sending on their views on medical questions of interest.

ORIGINAL CONTRIBUTIONS

THE PROTEIN POISON IN IMMUNITY AND DISEASE.*

By Victor C. Vaughan.
Dean of the Medical Faculty, University of Michigan, Ann Arbor.

MEMBERS of the Toronto Academy of Medicine, Gentlemen: I regard the invitation to address you a great honor and I hope that my acceptance may not be wholly without profit to you, and I can assure you that it is a great pleasure to me.

Much of my research work has been devoted to a study of the chemistry of bacteria. I have not succeeded in exhausting this field and it is probable that I have falsely estimated even the meagre results which I have obtained ,but I offer my contribution with the hope that it may induce others to enrich it. As my purpose in the start was to study the chemistry of bacterial cellular substance, my first task was to secure this material in large amounts and fairly free from contamination. After many failures, I succeeded in doing this by means of my tanks for massive cultures, the construction and operation of which I will demonstrate by slides at the close of the hour. I have been able to obtain this material in satisfactory quantity and free from contamination.

It is generally assumed that bacteria are low forms of vegetable life. If cellulose be essential to vegetable cells, none of the bacteria which we have studied can be classed as vegetable organisms, since none contain cellulose. I would not classify bacteria among animal organisms, but would place them in a group by themselves. I have designated them as particulate proteins. We have found two carbohydrates in bacterial cellular substance. One is certainly a constituent of the nucleic acid group, while the other seems to be a chitin-like substance. Bacterial cells yield nucleic acid and on disruption the xanthin bases are obtained. The most bulky constituent of bacterial cells are proteins, which yield amino and diamino acids on cleavage. Different species yield these split products in different proportions just as other unlike proteins do.

Because bacteria are simple morphologically, it has been assumed that they are also simple chemically. This assumption is not borne out by our studies. We have found bacterial cells, or the material of which they are composed, made up of molecules quite as complicated in chemical structure as are the cells of the animal body.

We found that when the cellular substance of pathogenic bacteria is split by the action of dilute alkali in absolute alcohol, a soluble poison is set free. Later, we found that the same or similar poisons may be

* Read before the Academy of Medicine, Toronto, 7th December, 1915.

obtained by the same method from all proteins, whether from pathogenic or non-pathogenic bacteria, also from vegetable and animal proteins. So far no true protein has been found which does not yield a poisonous group when split with dilute alkali in absolute alcohol. This active substance I have designated as the protein poison. Its exact chemical constitution is not yet known, but it gives the biuret and Millon tests, and for this reason would be classed as a protein. It does not contain a carbohydrate group. The following statements may be made concerning the protein poison: (1) It exists in all natural proteins. (2) One gram of casein will yield enough of this poison to kill eight hundred guinea-pigs when injected intravenously. (3) The protein poison is not histamin, nor a cholin derivative, but is a cleavage product of normal proteins, bacterial, vegetable, or animal. (4) It may be prepared from the tissues and organs of exsanguined animals and is equally poisonous to homologous and heterologous animals. (5) In the purest forms yet obtained, it kills guinea-pigs of from 200 to 300 g. body weight in doses of 0.2 mg. given intravenously. When given intravenously it is about twenty-five times as poisonous to guinea-pigs as to rabbits in proportion to body weight, but when given intraperitoneally it is equally poisonous to these animals in proportion to body weight. (6) While the protein poisons from different sources are grossly alike in action, there are differences. The poison obtained from animal tissues hastens the clotting of blood in vivo in the guinea-pig, rabbit and dog, while that from casein retards or wholly prevents the clotting of dog's blood. All the protein poisons tested inhibit the clotting of blood from the guinea-pig, rabbit and dog when added in vitro in certain proportions. (7) The action of the protein poison is similar to that of peptone, but the two are not identical. Peptone does not inhibit the clotting of blood in vitro, whatever the proportion. (8) When proteins are cleaved in the production of the poison, both fragments give the biuret test, but the poisonous protein in much higher dilution than the non-poisonous part. This shows that the proteins and their fragments contain acid amid and other substituted amid groups and that the products have not been deamidized in the cleavage. (9) Unbroken proteins and their split products give the xanthoproteic test, the poison in higher dilution than the unbroken protein or the non-poisonous part, indicating that all contain benzin nuclei, which are concentrated in the poisonous part. (10) Unbroken proteins and their poisonous fragments give the Millon test, while the non-poisonous part does not. This indicates that all the monohydroxy-benzin nuclei are concentrated in the poisonous portion. (11) Unbroken proteins and their non-poisonous fragments show the presence of carbohydrate by their response to the Molisch test, while the poisonous fragment contains no

carbohydrate. I have given these details in order to show that the protein poison is a true cleavage product from the protein molecule.

The protein poison slowly diffuses through animal membranes, but is not poisonous when given by mouth except in large amount. The digestive juices break it into the inert amino acids.

In order to understand the part that the protein poison plays in infection we may follow some experiments: (1) A guinea-pig receives intraperitoneally a fatal quantity of a living culture of the colon bacillus. For a period, which varies according to the size and virulence of the dose from eight to twelve hours, the animal shows no effect. It is in no way distinguishable in its behavior from its fellows. This corresponds to the period of incubation in the infectious diseases. During this time the micro-organisms are multiplying in the animal with great rapidity and still the animal is not visibly disturbed. At the expiration of this period, the animal plainly passes into an abnormal state. It no longer eats. Its coat becomes rough. Its temperature begins to fall. Pain is elicited by pressure on the abdomen. When the animal dies, an extensive, bloody peritonitis is found.

A second animal is treated with an intra-abdominal injection of a fatal dose of the dead cellular substance of the same bacillus. With the exception of the fact that the period of incubation is reduced several hours—frequently to half the time—the symptoms and the lesions are exactly the same as in the animal inoculated with the living organism.

A third animal is treated with a intra-abdominal injection of the soluble protein poison obtained from the cellular substance of the colon bacillus. In this animal there is no period of incubation. Within a few minutes the animal is sick and its temperature begins to fall, and continues to do so until death, which usually occurs within thirty minutes after the injection.

My interpretation of these observations is as follows: In the animal inoculated with the living organism, the period of incubation is the time necessary for the development of two functions. The first of these is the multiplication of the micro-organism. The amount of living bacilli injected—provided it is the minimum fatal dose—is not the fatal dose, but they multiply until the fatal does is reached. The second function developed during the period of incubation consists in the sensitization of the body cells and the development of a ferment which splits up the bacterial cellular substance with the consequent liberation of the protein poison, and it is this poison which kills the animal. In the second animal, the one treated with the dead cells, there is no multiplication of the organism, and the only function developed during the period of incubation is the elaboration by the body cells of the ferment, which splits up the bacterial cells and liberates the protein poison. Again,

it is the protein which kills. In the third animal, the one treated with the soluble poison, there is no period of incubation, since both functions characteristic of this period when the living bacillus has been used, have already been developed in vitro. The organism has been grown and split up artificially. Inasmuch as there are no lesions in the third animal, I conclude that the lesions result from the reaction between the bacterial and the body cells.

During the period of incubation of an infectious disease, the invading organism supplies the ferment, the simple nitrogenous constituents of the animal body—both simple proteins and amino acids—constitute the substrate, the process is synthetic and constructive, body proteins are converted into more complex bacterial proteins, no poison is liberated, and consequently no symptoms develop.

During the active progress of an infectious disease, the body cells supply the ferment, the bacterial proteins constitute the substrate, the process is analytic and destructive, a poison is liberated and the symptoms and lesions of the disease develop, while life is placed in jeopardy.

This might be stated differently as follows: It is not directly the growth and multiplication of bacteria in the animal body which cause the symptoms and lesions of the infectious diseases, but rather these result from the destruction of the bacteria by the body cells. This idea is not a new one, for I find that it was developed by Gannaleia as a result of large experimentation as long ago as 1888.

The difference between a pathogenic and a non-pathogenic bacterium does not depend upon the capability of the organism to develop a poison, because all proteins contain a poisonous group. Before a given bacterium can be pathogenic to a given animal it must be able to feed upon the animal body and at the same time the body cells must be incapable for the time of feeding on it. If this be true, the dead cellular substance of a given bacterium must be highly poisonous to an animal which is highly immune to that bacterium. I have found this to be true in a general way. With guinea-pigs the most highly poisonous bacterial cellular substance which I have found is the prodigiosus. I explain this on the ground that the normal ferments of the body cells of the guinea-pig quickly and completely disrupt the cell substance of the prodigiosus. This is the reason why this animal is immune to infection with this bacillus. The cells of this bacillus, which first find their way into a guinea-pig's body, are destroyed by the body cells and there is no opportunity for growth and infection. The amount of the protein poison set free in this process is not sufficient to have any effect on the animal. For exactly like reason a relatively small amount of the dead cellular substance injected into the guinea-pig kills. The foreign cells are immediately and completely disrupted with the liberation of the

protein poison, and in this case it is sufficient to kill the animal. On the other hand, the guinea-pig is highly susceptible to the bacillus tuberculosis because the ferments of the body cells have no destructive action on this organism. When the bacillus, even in small number, is injected in this animal, it meets with no adverse condition and infection proceeds. For like reason even large amounts of dead tubercle bacilli are borne by guinea-pigs. The above facts may be stated apparently paradoxically as follows: The dead cellular substance of a bacterium to which an animal is highly immune kills that animal when injected in relatively small amount. The dead cellular substance of a bacterium to which an animal is highly susceptible is borne by that animal in relatively large amount. I have found that one part of the cellular substance of the prodigiosus to one hundred thousand parts of body weight kills guinea-pigs when injected intraperitoneally, while one thousand times this amount of the cellular substance of the bacillus tuberculosis has no immediate effect on the animal. I do not claim that in these statements I am enunciating any universal truth. The nature of immunity is complicated and many factors are involved. I have no doubt that future and more extended study will lead to modifications of these statements.

Both bacterial and body cells, like all living things, may be trained, certain functions may be intensified or weakened. Bacteria may be increased in virulence or they may be attenuated. Likewise, functions normally dormant in body cells may be developed. Unorganized protein bodies, such as egg-white, and the constituents of blood serum contain a poison group. A single injection of one of these into an animal, man or guinea-pig, is without effect, while a second injection after a proper interval may even kill. This phenomenon, known as anaphylaxis, was at first considered antipodal to immunity, but closer study has shown that both are due to like training of body cells. In vaccination against smallpox or typhoid fever we train the body cells to destroy the specific viruses of these diseases. Later, when exposure to one of these diseases occurs, the virus is destroyed as soon as it enters the body and before it has increased to a dangerous amount and immunity has been secured. In like manner the first injection of serum develops in the body cells the function of disrupting the serum proteins, and a second injection in large amount liberates a harmful dose of the poison. If the second dose be small the ferment, which seems to be active only in *statu nascendi*, is exhausted, and then larger doses may be given. In this way we have learned to avoid the danger of anaphylactic shock in the treatment of diphtheria with antitoxin.

I have been interested in the effect of the protein poison on body temperature, and this matter has been studied in my own laboratory

and elsewhere. In small doses the protein poison elevates the temperature, while in larger amounts it depresses it. I have quite convinced myself at least that the fever of the infectious diseases is due to the parenteral digestion of the bacterial proteins. Fever of any desired type may be induced in animals by the parenteral introduction of a foreign protein. With egg-white one can induce in rabbits, by half-hour injections of so small an amount as 0.05 c.c., an acute fever with the temperature running to 107 deg. F. in a few hours and terminating fatally. By varying the amounts and the intervals between doses, one can establish an intermittent, a remittent or a continued fever. The last mentioned may be carried through weeks and will present a chart which cannot be distinguished from one of typhoid fever.

I can state quite positively that the protein poison is not a toxin in the sense that an antibody can be induced in animals by repeated sublethal doses. I have used many animals in attempts to secure an antibody, but invariably without success. It is true that a certain degree of tolerance to the poison can be easily induced, but I have never been able to carry this to any high degree, and attempts to produce an antibody have been wholly negative. It is a poison and not a toxin.

There is no indication that the protein poison has any specific effect upon phagocytosis. It must be evident to all that phagocytic protection or immunity is much more protective to the animal body than direct disruption of the invading organism, with the liberation of the protein poison. In fact, the greatest disaster that could happen to a patient in the height of an infectious disease would be the sudden and complete disruption of all the bacteria in his body. While on the other hand the engulfment of these bacteria by phagocytes would protect the body against the protein poison.

The specific groups of the protein molecules are in the non-poisonous fragment as the molecule is disrupted by my method. For instance, guinea-pigs are so sensitized by treatment with the non-poisonous part of the cellular substance of the tubercle bacillus, that when a subsequent injection of a relatively large amount of the unbroken tubercle protein is made, the animal is seriosly affected. Its temperature falls, and it may die. Repeated treatments of guinea-pigs and rabbits with the non-poisonous cleavage product from the typhoid bacillus render these animals immune to subsequent inoculations with as many as four times the amount of the living organism necessary to kill controls. My interpretation of these observations is that the non-poisonous portions of the disrupted bacterial proteins sensitize the body cells and when the living bacilli are subsequently injected the ferments of the trained body cells disrupt the living organisms immediately and before they can multiply and establish a true infection. On this theory, it is easy to

understand why the degree of immunity secured is limited, for as soon as the amount of bacterial substance injected becomes large enough to furnish a fatal dose of the poison, death results. It follows, therefore, that while my work along this line has been of scientific interest, it has led to no practical results in the treatment of the infectious diseases.

I do think that this work has thrown some light upon the relation between sensitization, or so-called anaphylaxis, and bacterial immunity. It must be evident to all that my work is in no way concerned with toxins, antitoxins and toxin immunity. My idea or theory concerning protein sensitization is that certain body cells are so modified in their chemical structure as a result of the first introduction of a foreign protein parenterally that they elaborate a wholly new or a highly modified proteolytic ferment, which digests that protein when reintroduced, and in doing so liberates the protein poison. According to this theory in infectious diseases the body cells pour out this specific ferment and the symptoms and lesions of the disease result from the destructive action if these ferments on the invading organisms. Therefore, the most rational treatment of the systemic infectious diseases, such as typhoid fever, consist in the employment of those procedures which best regulate and retard the bacterial disruption and the consequent liberation of the protein poison. Such treatment is best exemplified in the proper use of cold baths in the treatment of typhoid fever.

I can easily understand how vaccine treatment may be of value in the treatment of local infection, for it gives opportunity for the sensitization of body cells in general and brings greater strength to bear on the limited number of bacteria restricted to certain localities. But how vaccine therapy can be of value in systemic infections or how tuberculin can be of benefit in even moderately advanced pulmonary tuberculosis is beyond my understanding. Every lesson that I have learned in my experimental studies, if I have properly interpreted my own work, leads me to conclude that such treatment has no adequate justification in either theory or practice.

CORRIGAN'S INVESTIGATIONS ON THE CARDIO-VASCULAR SYSTEM.

(An Historical Sketch).*

By W. Ewart Ferguson, M.B.

DOMINIC JOHN CORRIGAN was born in Dublin on the 1st December, 1802, and died in the same city on 1st February, 1880. He received his primary education in a school attached to Maynooth College.

*Read at the Section of Medicine, Toronto Academy of Medicine, 12th December, 1916.

He was apprenticed, as was the custom in those days, to a village doctor, under whom he began his medical studies. Later on he went to Edinburgh, where he graduated as M.D. in 1825, along with William Stokes, who also was destined to become one of Dublin's noted physicians. Young Corrigan settled in Dublin and did his work in association with a brilliant group of men, among whom may be mentioned Colles, Carmichael, Cusack, Adams, Graves, Stokes, Marsh, Collins, Churchill and Montgomery. His graduation thesis was on the subject of scrofula; he had to secure his anatomical material for this article by methods that were not always the most seemly; and on one occasion when at the grave of a recently buried body, he met the weeping widow; his humanity was touched and he instituted a collection on her behalf.

During his life he received many honors. In 1830 he became physician to the Jarvis Street Hospital, where he had the control over six beds. It was out of this meagre material that he elaborated his article on aortic regurgitation. He remarked that "from these six beds he drew the most valuable portion of his clinical experience." In 1833 he became lecturer on medicine in the Carmichael School, and from 1840 to 1866 was physician to the House of Industry Hospital. He was made physician in ordinary to the Queen of Ireland, and in 1866 was created a baronet. On five different occasions he was president of the Irish College of Physicians. From 1870 to 1874 he represented Dublin in the House of Commons, and always took the side of popular legislation that favored the general masses. In 1843 he obtained the diploma if M.R.C.S. (Eng.), and in 1849 the University of Dublin conferred upon him the degree of M.D. *honoris causa*. He became a member of the Senate of Queen's University, Dublin, on its foundation and for many years represented it on the general Medical Council of Britain, where his voice rang out a clear note in favor of a higher standard of medical education. He was one of the founders of the Dublin Pathological Society, and also one of its presidents. He was also a president of the Royal Zoological Society of Ireland. In 1875, he was elected president of the Pharmaceutical Society of Ireland. He was also a member of the Royal Irish Academy, of the Academy of Medicine, Paris, and of the Harveian Society, London.

Before taking up the proper topic of this paper it may be well to look for a few moments at some of the other writings and teachings of Corrigan. In the *London Medical Gazette* of 15th February, 1841, appears a lecture on some general principles of clinical investigation in which he urges upon his students the necessity for constant and careful observation; and quotes the words of Bichat, the noted French physician, who said, shortly before his death: "You ask me how I have

learned so much; it is because I have read so little. Books are but copies. Why have resource to copies when the originals are before me? My books are the living, and the dead, I study these." This was a standing axiom with Corrigan.

In the same journal for the 12th of March, 1841, Corrigan contributed an excellent article on the use of the stethoscope in pulmonary and bronchial affections. A study of this article reveals with what thoroughness he recorded his findings. Step by step he explains characteristics of the healthy vesicular murmur, the puerile vesicular murmur, the sonorous sibilous murmur, the cavernous and bronchial murmur, and the crepitating and mucous rattles. These teachings reveal an observer of rare acuteness. In the *London Medical Gazette* of March, April, May and June, 1841, are to be found his series of clinical lectures on fevers. In these lectures he clearly points out three types, namely: A short continued fever of low mortality and speedy convalescence; a second form, the true typhus, with its crisis and an absense of local lesions, and a third fever with slow onset, slow convalescence, rose-colored spots, a follicular enteritis and the presence of ulcers in the ileum, while during the illness there are gruel-like stools and sometimes blood. In describing this type of fever he frequently employs the term "typhoid."

Let us now take up his work in the cardio-vascular system, for it is here that he made his great name and, it is around this part of his writings that some have tried to rob him of the credit that is due him.

In the *London Lancet* for 1829, is to be found a very illuminating article under the caption, "Inquiry into the Causes of Bruit de Soufflet and Fremissement," in which he examines carefully the arguments for and against Laennec's theory. He takes up this subject again and contributes an exhaustive article upon it in the November issue of the *Dudlin Journal of Medical Sciences* for 1836. Had Corrigan contributed only this paper his name would remain as a master in medicine. George W. Balfour, of Edinburgh, an eminent authority on diseases of the heart, remarks in his last edition, bearing the date of 1898, that "Corrigan was the first to start the theory that murmurs occurring in the course of the circulation are due to vibrations produced by eddies in the blood stream itself." When one remembers that these observations were made by Corrigan, and his conclusions formulated and given to the world long before A. Chaveau and Felix Savart had conducted their investigations into the production of vibrations and bruits by fluid veins and eddies, the importance and originality of Corrigan's researches assume new and enlarged proportions. This article remains still unchallenged.

The principles which he laid down in his article in the *Lancet* of 1829, on the Bruit de Soufflet, he applied, in 1830 and 1831, to the diagnosis of anenrism of the abdominal aorta. This method is fully discussed in his article in the second valume of the *Dublin Journal of Medical Sciences* for 1831. He shows very clearly that when the blood passes from a narrower to a wider channel, where the walls are also frequently relaxed, eddies will be produced and new vibrations set up. The honor of having discovered the true cause of cardiac and vascular bruits must be conceded in the fullest measure to Corrigan; for in a masterly manner he disproves the theories of Laennec, Andral, Bertin, Williams, Spittal, Hope and Elliotson. Dr. Williams appears to have come the nearest to the truth, for he said that the bruits are caused by "a certain resistance given to the blood moving with a certain force." He only offered this is a conjecture, but advanced no reasons.

It remains now only to refer to his classic on "Pedmanent Pateney of the mouth of the Aorta or Inadegnacy of the Aortic valves." Before dealing with his paper, which appeared in the April number of the *Edinburgh Medical and Surgical Journal* for 1832, it may be well to mention three other names that are entitled to some credit in this connection. W. Cooper, in 1705, and R. Vieussens, in 1715, had noted the collapsing pulse; but neither of these had associated this type of pulse with inadequacy of the aortic valves; they discovered a clinical fact, but failed to show its cause.

Dr. Norman Moore, in the Dictionary of National Biography, writing on Corrigan, remarks that "his success was due to his good sense and large experience, but he was not a profound physician nor a learned one."

In making this criticism, Dr. Moore has in mind the claims of Thomas Hodgkin, to be regarded as the discoverer of aortic insufficiency. It is necessary now to look into the share of praise that must be accorded to these two great men.

George Balfour, who was a very careful writer, states "the pulse of aortic incompetance is as was first pointed out by Sir Dominic Corrigan, something entirely *sui generis*." Here one meets with no hesitancy in giving the credit to Corrigan as the first to describe the pulse in this form of valvular disease, but to be fully sure of one's ground it is necessary to go to the original papers of Hodgkins. These are to be found in the *London Medical Gazette* of 1827 and 1829.

In the first place, Hodgkins had a fairly clear conception of endocarditis, and he was careful to point out that the lesions are situated not quite at the edges of the valves, but at that part which comes strongly in contact with another cusp. He also pointed out that masses connected with the valves have a tendency by friction to set up changes in near

structures. The first clear light from a clinical aspect thrown on aortic obstruction is to be found in Hodgkin's paper with regard to aortic requigitation, he gave close attention to the throbbing in the large arteries, and he also describes a murmur in the aortic area that "presented this peculiarity that it was double, attending the systole as well as the diastole." He also held that in some cases aortic lesion might be due to violent exertion.

When one comes to study closely what he says about the murmurs of incompetence it must be admitted there is a considerable degree of ambiguity in his statements.

About the same time that Corrigan published his paper, Hope brought out his classical work in which there is a very able description of aortic valve incompetence. It is quite clear, however, that Corrigan's paper was published at an earlier date in 1832 than was Hope's work, and it is also equally clear that Corrigan had not seen or even heard of Hodgkin's paper.

This historical note makes it plain that the full credit for a clear and independent exposition of patency of the aortic valves rests with the Dublin physician. He lays down four conditions that may cause the deficiency: (1) The valves may be absorbed in patches. (2) One or more of the valves may be ruptured. (3) The valves may be tightened or curved in or against the side of the aorta. (4) The mouth of the aorta may be dilated.

In discussing the signs of aortic patency he pays special attention to three things: (1) The throbbing that is to benoticed in the subclavian and carotid arteries, and sometimes in the radials, which he calls the visible pusation. (2) The bruit de soufflet, which is heard over the ascending aorta, the subclavian and the carotid arteries, and which is sychronous with the visible pulsation, and the cardiac systole. (3) The fremissement or rushing thrill which is readily felt in the subclavians and carotids and sometimes at the wrists.

The bruit and fremissement or thrill he accounts for as being caused by the heart violently throwing its quota of blood into somewhat empty and relaxed vessels, thereby producing the vibrations, blood eddies and fluid currents which he was the first to show caused all cardiac bruits.

As one reads Corrigan's account of the general symptoms and signs, his description of the bruits, the pulse and the throbbing of the arteries, the remarks he makes on the history and progress of these cases, and his splendid exposition on the diagnosis of the affection, it must be admitted that he left but little for future writers to add. Throughout his description it seems impossible to find a flaw in his argument. Step by step he reasons from the existence of incompetent valves to all the

phenomena that follow. His remarks on diagnosis are replete with sound logic, and he clears away the difficulties that exist in distinguishing between the disease under discussion and aneurism of the arch or the innominate artery. On treatment he condemns all depleting and debilitating methods. He regards the hyperthophy as a wise prevision of nature, and the increase in the frequency of the heart's action as an important factor in lessening the quantity of blood that flows backward. It is for this reason that he condemns the employment of digitalis in aortic regurgitation. His reason is that this drug lengthens the period of distole and favors the backward flow of the blood into the ventricle. If, however, active inflammatory complications occur, blood letting is advised.

In the treatment of patency of the aortic valves, he recommends pectoral mixtures, containing a liberal quantity of opium, for the cough and bronchitis that may be present. Over the condition of the valves no drugs can have any influence, as set forth in these words: "There is no medicine that can have any such power after the disease has been of much standing; and if the valves have been perforated or broken, it is obviously impossible to restore them to their original state." If the disease is seen early in its course, when it has followed rheumatism, he recommends mercury to the point of salivation, and counter irritations.

It is where he discusses the future of these cases that an evident error of judgment occurs. His words are: "In this disease assurance may be given against any sudden termination, and the patient may be permitted not only to attend to his business or profession, but may be assured that, in leading a life of business and tolerable activity, he is adopting the very best means to prolong his life." Where there is so much that is excellent, we can overlook this error.

In conclusion let it be remembered that, though Corrigan did not receive a liberal general education, he nevertheless possessed a simple, clear and strong command of the English language. He was endowed with a good fund of fine humor and common sense, and was free from bigotry, qualities which endeared him to both patients and colleagues. He was a noble type of citizen, of whom it can be said: "He bore without abuse the grand name of gentleman." He was a true student of nature and a keen interpreter of its phenomena ,which were the books he most frequently consulted. His contributions to medicine on the use of the stethoscope in pulmonary diseases, the distinction he drew, both clinically and pathologically, between typhus and typhoid fever, his article on the diagnosis of the abdominal aneurism, his original and fundamental researches on cardiac bruits, and his classic on aortic inadequacy, all stamp him as one of Britain's foremost physicians.

CURRENT MEDICAL LITERATURE

ANAEMIA DUE TO ULCERATED HAEMORRHOIDS.

Dr. J. F. Saphir concludes his article in the *New York Medical Journal* as follows:

1. All cases with a history of bleeding from the rectum should receive a thorough rectal examination; although slight bleeding may point to some malignant growth, yet severe bleeding from the rectum, with much loss of weight and cachexia, does not necessarily mean cancer.

2. No physician should allow a patient complaining of bleeding from the rectum to get into as weakened a condition as these did without insisting upon operation.

3. Attempts at temporary relief of rectal bleeding or checking by means of astringent salves or powders or suppositories, with the hope of obtaining a cure, is poor practice.

4. Bleeding from ulcerated internal hemorrhoids may produce such complete exsanguination that transfusion becomes a necessity to save life.

5. Operative interference under local or general anesthesia, and removal of the cause of bleeding should be advised as early as possible, thereby saving the patient much agony and suffering, and obviating the danger which is apt to follow local or expectant treatment.

RELATION OF DIET TO BERIBERI AND OTHER DEFICIENCY DISEASES.

Edward B. Vedder (*Journal A. M. A.*, November 18, 1906) concedes that beriberi is due to the deficiency of certain substances, or a certain substance in the diet, and that it has been conclusively shown by a number of workers that a substance exists in the outer layers of rice which will prevent the development of the disease and will cure polyneuritis in birds when given in extremely small amounts. This substance has never been isolated in pure form, and its precise chemical constitution is not known owing to its decomposing during the process of extraction and purification. Recently substances have been prepared synthetically which are also capable of curing polyneuritis of birds, and these have been found to be characterized chiefly by the remarkable degree of dynamic isomerism which has a profound influence on their curative properties. Such substances belong to the hydroxypyridins, but it is probable that their properties do not depend upon their special

chemical nature, but rather upon their isomeric properties. The vitamine isolated from yeast—adenin—also exhibits a marked property of forming isomers. The exact mode of action and role of the vitamines is not yet known and all explanations are mere hypotheses. Vedder suggests the hypothesis that the antineuritic substance which prevents beriberi acts as an essential building stone for the repair of the nervous tissue and that the disease is produced through deficiency in this substance by the occurrence of an exhaustion going on to the production of degenerative changes. This hypothesis is supported by the fact that very early in the course of the experimental production of polyneuritis in birds, long before the occurrence of symptoms, microscopical changes are demonstrable in the nervous tissues. Study of the several forms of deficiency diseases indicates that there is a number of different vitamines ,the absence of each of which is responsible for a definite form of disease. It is well known that the dietetic deficiency which produces beriberi does not lead to scurvy, and vice versa. It is, further, probable that pellagra is a deficiency disease, for those who are its victims live on diets known to produce scurvy and beriberi. They are probably, however, protected from these diseases by the introduction of other articles of food which still leave them susceptible to pellagra. Our knowledge of the deficiency diseases, though meagre, indicates the necessity of certain dietary rules to prevent their occurrence. Thus, where bread is a staple article of diet, it should be made of whole wheat flour; brown, undermilled rice should be used where this article is a staple in the diet; fresh beans, peas, and legumes should be given at least once weekly; fresh fruits and vegetables should be used once or twice weekly; barley, known to prevent beriberi, should be used in all soups; yellow, or water-ground corn meal should be used; white potatoes and fresh meat should be given daily if possible, and in any case at least once weekly; canned goods should not be used too exclusively.—*New York Medical Journal.*

MINERAL OIL IN CONSTIPATION.

To judge by the number of manufacturers that have put some preparation of mineral oil upon the market, the prescription of it must have grown by leaps and bounds since it was first put forward as a sort of substitute for Sir Arbuthnot Lane's kink operatiin. Most of the "literature" is still of a proprietary nature, and it is natural, therefore, that we should read with interest the contribution to *Paris médical* for June 24, 1916, of Le Tanneur, on what he calls practical points in the use of mineral oil in cinstipation. Olive oil, he observes, has long been

a favorite laxative in Provence and elsewhere, but only that portion of each dose that is not saponified by the liver and pancreas acts in a laxative manner, consequently there is fatigue at the expense of digestion on the part of these glands whenever it is exhibited. With mineral oil, on the other hand, there is no saponification and no reflex of any kind is excited; the fecal mass is simply lubricated and its passage greatly facilitated. Moreover, the interior of the intestine is covered with a thin protective film, and any tiny excoriations caused by rough particles of food are healed. Since we are concerned with a purely mechanical action, habituation to the oil on the part of the patient is impossible.

An interesting fact is elicited by Le Tanneur is that at autopsy of several subjects who were under mineral oil treatment at the time of death, the appendix was found to be literally filled with oil; we must remember that this means absolute sterility of the appendix. Le Tanneur insists on the importance of prescribing a pure and specially prepared oil, one worthy of the dignity of inaugurating a perfectly new and unequalled form of treatment for an historically obstinate condi tion.

We prescribe two tablespoonfuls of the mineral oil daily, before breakfast, fasting, or after dinner, as the patient prefers. The first stool induced by the oil will appear in about forty-eight hours, and as there is, so to speak, no lubrication ahead of it, there may be some difficulty and straining in its passage; this should be forestalled by an enema. The bowels soon become regular, but the oil should be taken every day for at least a fortnight. The patient will then be astonished to note that the bowels continue to move daily, although the oil has been withdrawn. He should have the fact impressed upon him that he is not taking an ordinary cathartic, but a new treatment for constipation, which will cure if persisted in, and he is therefore not to be discouraged if the effects at first are not as great as he had expected. Children may have a sweetened preparation of the oil, but this is not usually necessary, as a good oil has not a fatty appearance, nor even a greasy taste. Le Tanneur gives credit to Gaudier, of Lille, and Pauchet. of Amiens, for their speedy appreciation of Sir Arbuthnot Lane's discovery and their immediate practical application of it.—*New York Med. Jour.*

A NEW SIGN OF SCIATICA.

None of the evidences of sciatica, such as pain over the nerve, Lasêgue's sign, muscular atrophy, modifications of electrical reactions, scoliosis, elevation of the heel in walking, fibrillary contractions of the

leg muscles, clonus of the glutei, abolition of the Achilles reflex, lessening of the gluteal fold, etc., is in itself pathognomonic of the disease in question, and in a given case some of them will be absent all the time. Hence, a true pathognomonic sign would prove of great value in cases where rapid and certain diagnosis is necessary. Pisani believes that he has discovered such a sign in connection with the behavior of the abdominal reflex on the affected side (*Malpighi*, July 1-15). He has found this to be the predominating symptom in every case thus far examined. It consists in the fact that the reflexes are less pronounced or absent on the sound side. The superior, medion, and inferior reflexes should all be tested. The patient lies on his back with his abdominal walls fully relaxed, and the limbs extended symmetrically. The predominance of the reflex on the affected side is not in itself strictly pathognomonic, but is found in over 80 per cent. of all patients examined; while the presence of this phenomenon in non-sciatic cases means some condition which could never be confounded with sciatica, so that the sign has all the force of actual pathognomonic symptoms. As already stated no negative results have yet appeared.

DIPHTHERIA CARRIERS.

Sophie Rabinoff, New York (*Journal A. M. A.*, Dec. 9, 1916), gives her experience with the treatment and care of diphtheria carrier in an institution caring for about 400 children under 5 years of age. All have been subjected to the Schick test in a routine way previously so that there was a record of susceptibles and non-susceptibles. Several cases of diphtheria occurred among the children, as well as among the attendants, and the patients were promptly isolated, while nose and throat cultures were taken of every one in the institution. As the immunity of diphtheria occurred among the children, as well as among the attend- conferred by antitoxin is only temporary, lasting about three weeks, efforts were directed to the prompt elimination of carriers to prevent further exposure to susceptibles. In the beginning they were either isolated or placed in dermitories with children shown by the Schick test to be immune. Only those were considered carriers who furnished two successive positive cultures. Local treatment was rigorously carried out, but there was a group of resistant patients which continued to show the bacilli over a long period of time, or in whom the cultures after becoming negative became again positive after stopping treatment. They have, therefore, continued to follow up discharged patients, and have observed them from two to six months. Local treatments all failed to give satisfaction, and Fuller's earth blown into the nostrils according

to the method suggested by Rappaport and Hektoen only gave good results in adults. It was finally decided to remove the tonsils and adenoids in all cases in which the organisms persisted, taking small groups at a time and continuing to make cultures, pending operation. Up to the present time they can report only a small group, ten in all, but the results are so promising that they feel justified in proceeding with this method. The patients follow the usual course following tonsillectomy. After the membrane which forms at the tonsillar incisure has disappeared, the cultures invariably become negative, the results being similar to those reported by Ruh, Miller and Perkins (*Journal A. M. A.*, March 25, 1916, p. 941). They conclude that removal of tonsils and adenoids seems to offer a safe and rapid method of elminating diphtheria bacilli from the nose and throat of carriers and should be resorted to when other methods fail.

SPECULATIONS REGARDING THE PANCREAS AND METABOLISM IN DIABETES.

Hugh P. Greeley (*Boston Med. and Surg. Jour*) offers his ideas on this subject in the nature of a preliminary statement. In discussing it he says that the work of the pancreas, or of its internal secretion, is almost as continuous as the heart-beat, and that almost all the organs of the body are provided with great reserve power; experimentally, one-eighth of a pancreas, or less, is usually sufficient to prevent the onset of diabetes. There is undoubtedly a differing pancreatic function in all of us, varying in the same way as our mental capacities vary; our pancreases are "geared" to a certain maximum metabolic activity and endurance, and the relation of functional capacity to total metabolism is a mathematical one. Supposing the normal figures are represented by 4/4 pancreatic capacity, covering a metabolic activity of 60 kilos body weight: If the body weight is increased by 40 kilos, the total metabolism requirement would be increased and the functional capacity relatively reduced 66 per cent. The amount of reserve power would determine its sufficiency. Failure of compensation would mean diabetes. In obesity, a similar condition is present, since it may be one of abnormal metabolic function, and is closely related to diabetes. An enormous increase in body weight so increases the total metabolism that the pancreas succumbs to the strain and diabetes ensues. In an opposite way, influences which reduce or retard metabolic activity benefit diabetes. In speaking of the relation of age to diabetes, Greeley shows that diabetes is the severest in infancy and youth and mildest in old age. The remarkable variations in sugar tolerance in the same diabetic individual has been

suggested to argue the functional character of the disease. It does not necessaryily follow, however. Severe organic disease in any organ is capable of the same variation of function under the sole influence of rest. Herein lies the benefit of the Allen fasting treatment. Greeley cites examples of cases of diabetes in connection with obesity in the adult and the curative effect when the fat was reduced; while in the case of a child with diabetes and relatively high sugar tolerance, with the gain in weight and on total sugar-free diet came improvement in diabetic conditions. He concludes by saying that it remains to be proven in actual regeneration of power of the pancreas. The thyroid and liver are regenerative organs, but the pancreas, up to the present time, has seemed not to belong to this group.—*Medical Record.*

GASTRIC SURGERY.

G. W. Crile, Cleveland (*Journal A. M. A.*, Sept. 16, 1916) describes the technique used in the Lakeside Hospital by himself and colleagues as regards operations on the stomach, including explorations in cases of inoperable cancer, resections, and gastro-enterostomies for cancer and ulcer. He notices the progress made of late years in gastric surgery. The mortality is still too high, he thinks, not on account of false operative technique, but due to some unappreciated underlying factor, as shown by the always comparatively low mortality rate of operations on the pelvic organs. It is because the functions of the stomach and intestines govern so completely the balance of material for constructive metabolism. This gives us the key to the fundamental cause of the high hazard of major gastric operations, but also suggests a plan of attack by means of which this mortality can be reduced. The reserves of the starved patient must be built up by the introduction of water, sodium bicarbonate and glucose, and especially by an adequate amount of sleep and rest. Acid formation must be diminished by the elimination as far as possible of worry, fear, anxiety, exertion, loss of sleep, trauma and anesthesia. In ulcer, the fate of the ulcer bearing area is the chief consideration on account of the tendency to cancer growth. The patient should be kept under strict dietetic care, and if in certain cases mouth infection and teeth defects exist they should be corrected. After surgical relief from ulcer as after a thyroidectomy, the immediate relief is so marked that it is hard to make the patient believe in the necessity of lang continued special care. The clinical results of surgical treatment of duodenal ulcers are more striking even than in cases of gastric ulcer. The rapid disappearance of gastric ulcer masses even in cases supposed to be carcinoma has been illustrated by Lilienthal and Willy

Meyer, and Crile has seen three such cases. The larger part of his article is given to the technique of the operation used, the anociation method always being employed. He emphasizes in his concluding remarks the importance of building up nutrition and the application of the principal of anociation through the operation itself, and in cases of ulcer a prolonged post-operative period—six months at least—under therapeutic direction, especially as regards diet.

RESULTS OBTAINED WITH CARREL'S METHOD IN THE TREATMENT OF WOUNDS.

M. Perret (*Bulletin de l'Académie de médicine,* April 11, 1916) states that mere inspection, revealing a great variety of dirt-carrying substances in the average wound by a military missile, is sufficient to convince one of the infected condition of these wounds, as a class. Two important points in the application of Carrel's treatment are, (1) that the wounded must be treated within six hours after the reception of the injury, and (2) that the wounds must be widely opened up and entirely freed of all foreign substances before the irrigations with Dakin's fluid are begun. Within a period of about four months there were treated with Carrel's method under Perret's supervision 111 wounds of intermediate or pronounced severity, comprising seventy-eight wounds of the soft parts and thirty-three involving bones. In the former group complete disinfection was attained in three or four days, repair then following with extraordinary rapidity. Some wounds healed in ten days. In the case of a man who had sustained a perforating wound of the left thigh, a long abdominal erosion, and a broad, deep laceration of the right thigh, with hernia of the torn muscles and metallic fragments disseminated in the tissues to a depth of six centimetres, treatment of the wound by Carrel's method, after proper removal of foreign bodies, resulted in the patient's discharge in three weeks and his return to the front a week later. Wounds thus dealt with present a bright red color, never suppurate, and exhibit no odor or inflammatory reaction; the inntial high temperature drops rapidly to normal. Compound fractures of the upper extremity healed very readily; two fractures at the elbow, for example, undergoing repair without fever at any time. The compound fractures of the lower extremity included injuries of the knee joint, comminuted thigh fractures, and fractures of the leg. The entire series of 111 patients is now recovered and in good health. No amputations were necessary, their principal cause, infection, having been eradicated. The statement may thus be boldly made that wound infection

has now been mastered. Whether fluids other than Dakin's solution might yield the same results the author does not know.—*N. Y. Medical Journal.*

PAINLESS LABOR.

J. C. Edgar, New York (*Journal A. M. A.*, Sept. 2, 1916), says the recent attention to the question of painless labor has accomplished much good in stimulating research into newer and older methods, in demonstrating that the use of some preparation of opium is not as dangerous to the child as has been supposed, and emphasizing the had results of fear and pain and shock of labor on the highly civilized neuropathic woman, for whom it is a lifesaving measure. The most satisfactory painless labor method, at the present, combines opium and antispasmodics for the first stage, with possibly vapor narcosis toward the end of this stage, and vapor analgesis and anesthesia for the first and terminal parts of the second stage, respectively. The narcosis aimed at should, until the perineal stage, be analgesic and anesthetic in character and requires considerable experience for its proper production. Besides the usual facts as regards mental condition and physical condition in labor and the value of sleep in the early hours, Edgar remarks that suggestion and hypnotism can be of value only in the very early stages. Blocking of the sensory nerves and nerve roots has not fulfilled expectations, and the recent literature is not convincing. Opium alone or combined with scopolamin, chloral, atropin, the bromids, strychnin, caffein, and possibly gas analgesia is the mainstay for the first stage, and his experience with the routine use of such measures has been excellent. The use of "obstetric" ether and chloroform is well known; but unlike nitrous oxid vapor they delay instead of hastening action. As an intermittent analgesic or anesthetic the nitrous oxygen mixture is well adapted to the second stage, but in the hands of any inexperienced hospital intern his results have been deporable, though it works out, however, most satisfactory in the hands of a first-class anesthetist. Edgar differs from the opinion that nitrous oxid oxygen is safe in inexperienced hands, and quotes from Hasbrouck, who, he says, is perhaps the greatest authority on its use. He believes that eventually an established method of painless labor may be considered among public health questions, and painless labor in the future may limit birth control and criminal abortion.

PITUITARY EXTRACT IN DIABETES INSIPIDUS.

Our ignorance of the functions of the pituitary body was unlimited until it was first studied by Schäfer and Oliver in 1895, In 1901

Magnus and Schäfer found that extract of the infundibular or posterior lobe of the gland acted as a diuretic, and in 1905 Herring and Schäfer proved that this extract dilated the renal arteries while constricting the other arteries of the greater circulation. At the present time many piuitary preparations are on the market—proprietary drugs made for the most part from the posterior part of the gland—and the literature dealing with them is very extensive; their names are many, including hypophysin, pituitrin, infundibulin, and pituglandol. These extracts have been employed in the treatment of anuria or diminution of the renal secretion of urine, apparently with success. The polyuria which follows operative manipulation or disturbance of the posterior lobe of the pituitary body has been particularly remarked by Cushing, who is inclined to attribute many cases of either transient or lasting polyuria to increased secretory activity of the hypophysis. There can be no doubt, therefore, that polyuria is one of the effects of exhibiting pituitary extracts in both health and certain diseases. Oddly enough, its effelt in diabetes insipidus is precisely the opposite, as was pointed out by Francesco, of Venice, in 1913. This author quoted two patients passing six or eight litres of urine a day, in whom pituitary extract reduced the urinary output to the more moderate figure of one or two litres a day. Rosenfeld has recently put on record two cases of diabetes insipidus in which subcutaneous in jections of 0.5 gram of pituglandol much reduced the output of rine. The particular interest of his communication lies in this, that in one instance the concentration of the urinary sodium chloride was much increased when the polyuria disappeared under the influence of the drug, while in the other case it was unaltered. The first patient, a well-nourished woman of 38, passed some five litres of urine daily while on a diet containing little sodium chloride. The pituglandol injections reduced the urinary output to from one to two litres a day, while the percentage of sodium chloride in the urine rose from under 0.1 per cent. to 0.2 per cent., the latter figure being reached when more of the salt was added to the diet. The second patient, a man with cystitis, hypertrophy of the prostate, and renal disease, who was passing from five to seven litres of urine daily, passed a smaller amount of water while treated with pituglandol, without exhibiting any increase in the sodium chloride concentration, but rather the reverse. In the first patient administration of the drug by the rectum did not lessen the polyuria; she was a case of primary polydipsia, no doubt, or, as Rosenfeld put is, of symptomatic polyuria, for the addition of common salt to her diet did not increase the secretion of urine. The second patient, however, exhibited primary polyuria, or true diabetes insipidus. Rosenfeld had evidence to show that his kid-

neys were incapable of secreting a more concentrated urine. Rosenfeld also quotes a third patient, a soldier, passing five or six litres of urine a day, on whose polyuria hypophysin and pituglandol were almost without influence. The conclusion reached is that these extracts influence polyuria by acting on some urinary (or polyuric) centre in the floor of the fourth ventricle; the centre diminishes the polyuria by increasing the capacity of the kidneys to secrete a concentrated urine. This action of pituitary extracts is but transient, lasting in favorable cases for anly a few days.—*British Medical Journal.*

TREATMENT OF SUPPURATIVE ARTHRITIS OF THE KNEE.

G. Fieux, in *Press médicale* for March 9, 1916, refers to the feeling of uncertainty and anxiety which still prevails among surgeons as to the proper treatment of infected wounds of the knee joint. Even where examination suggested a complete absence of bone injury, early and extensive drainage has too often been followed by a period of apparent good condition or betterment, then a widespread return of infection amenable only to amputation, the patient even then sometimes succumbing. Observation of such cases has convinced Fieux that the defect in the present treatment is inefficiency of drainage. Pus is retained in the serous cavity, notwithstanding the presence of large permeable tubes, and this is due to the fact that behind and around the drains, the serosa becomes completely shut off, the articular cavity being replaced by a spongy, purulent mass. To avoid this, Fieux substitutes for arthrotomy and drainage an arthrostomy or marsupialization of the synovial membrane. In beginning acute arthritis a single opening has appeared sufficient. Before or after extraction of the projectile, according to circumstances, a crucial incision, each branch of which measures five to six cm., is made on the external aspect of the limb, in part above the level of the knee. Pus having escaped, the joint is explored with the finger and irrigated with tepid saline solution at low pressure. The apices of the four flaps formed by the crucial incision are then reflected on their respective bases, with the serous coat outward, and surtured to the skin so that an opening into the joint sufficiently large to admit the thumb freely is formed. A flat dressing is placed over the opening and the limb is immobilized in a position of slight external rotation, to favor issue of the septic fluids. Where the operation has been late, and the long cul-de-sac beneath the quadriceps no longer communicates freely with the joint, a second opening is made over the upper portion of this sac, sometimes extending twelve to fifteen cm. above the patella. Finally, in cases of suppurative arthritis treated vainly for weeks by large incisions and the customary drains, with tracts of suppuration

between the muscles, unexpectedly favorable results were at times obtained by adding to the two preceding measures removal of the patella.—*New York Med. Journal.*

THE POSSIBLE FUNCTION OF THE CEREBRO-SPINAL FLUID.

W. D. Halliburton, in an address before the Neurological Section of the Royal Society of Medicine (*Brit. Med. Jour.*), gives the normal characteristics, composition, and fate of this fluid and its pressure. In speaking of the means of communication between the cerebro-spinal fluid and other parts of the body, or rather the lack of it, he calls attention to the fact that Dixon and he found that dyes added to the fluid travel along the course of certain cranial nerves, especially the olfactory nerve. Such is not the case with the spinal nerves; no dye can be detected in their sheaths outside the spinal canal, and no dye is discernigle in the lymph of the thoracic duct. Clinically the olfactory outlet is important as it affords an opportunity for the entry of infective agents. He draws attention to the apparently analogous relation between it and the blood in both directions, this is lacking in cerebro-spinal fluid; at least it appears to be permeable to substances passing from it to the blood, but impermeable (except for oxygen) in the direction from the blood to the fluid. Halliburton says that he has been led to take the following view: The enrvous mechanism being so sensitive, so easily influenced by anything unusual, the neurons must be bathed in an ideal physiological saline solution to maintain their osmotic equilibrium; the trace of protein it contains is probably quite sufficient for nutritive processes. The sugar would serve for a supply of energy. The choroidal epithelium is really exercising a protective function by keeping out harmful proteins (toxins, etc.), while some harmless ones are kept back almost emopletely; all share the same process of exclusion. This protective action also applies in adddtion to the majority of soluble drugs; this may operate so as to be detrimental in diseases conditions, but one can hardly expect discrimination on the part of the epithelial secreting cells. The non-access of metallic and other poisons to the nervous elements is such a *sine qua non* for their health that during those periods when such substances are given for the relief of disease or the slaughtering of parasites the choroidal cells are unable to change their habits, and so do not allow the drugs to get through. Such, Halliburton states, he believes to be the real significance of this remarkable secretion.—*Medical Record.*

AMEBIC DYSENTERY.

Mauté has studied this condition as it occurs in Morocco (*La Presse Medicale*). At Fez it is endemic. Without giving the details of his studies, he proceeds to his results. Intestinal amebiasis is a chronic affection with acute exacerbations. The dysenteric crisis is only an episode in the course of the disease. If after injections of emetine the stools become formed, this does not mean that the bowel has become sterilized. This statement cannot be too strongly emphasized. The usual practice is as follows: When the stools have become normal the emetine injections are renewed (1 to 3 injections) and the patient kept under observation for about a fortnight. If there are no signs of recurrence he is discharged "cured." This custom is very dangerous, not only for the patient himself, but for those about him. It has recently been shown that carriers of amebic cysts transmit the disease. In eight cases out of ten so-called emetine cures the author has found these cysts in the stools. The latter must be persistently followed up. If finds continue negative, a provocative test should be made. The author has succeeded best with iodized water 1:1000 (1 gm. iodine, 2 gms. iodide per liter of water). The injection should be given in the morning, and two or three hours later the patient will expel amid some gripes a certain amount of mucus filled with cells of all kinds. In rare cases the ameba will be present, both in the cysts and as free bodies, even in cases which have seemed to be cured for weeks and in whose spontaneous stools no parasite can be discovered. From another angle, amebic dysentery may be overlooked because of its mild character. In such cases, hepatic abscesses are more prone to develop than in the more severe forms; in fact, the abscesses may even seem to be spontaneous. In an endemic *milieu*, every intestinal derangement should be suspected and researches instituted. At Fez, in addition to the *Amoeba histolytica*, the author found the trichomonas and other protozoans, and intestinal worms (triscephalus, ascaris). As these parasites appear to cause a sort of mixture of infection or symbrosis which is hostile to a good prognosis, santonin should be given as a vermifuge. Turpentine is said to be active against the protozoans. It is impossible to determine the duration of the evolution of intestinal amebiasis. In 22 per cent. of cases the author has seen the cysts disappear by the fifth week, and in 72 per cent, from the fifth to the tenth week. In 6 per cent. the disease was especially refractory, and failed to yield under emetine-arsenic treatment. Chlorhydrate of emetine is a veritable specific against the dysenteric crisis. If the diarrhoea persists this is commonly due to the presence of worms or the trichomonas. The post-dysenteric management has already been outlined. Everything depends on a good quality of emetine. In refractory cases neosalvansan treatment may be added.—*Medical Record.*

OZOENA.

Drs. Henry Horn and Ernest Victors, of San Francisco, writing in *New York Medical Journal,* conclude as follows:

Certain characteristics of coccobacillus fœtidus ozœnæ (Perez) have been heretofore described erroneously, in that the organism is motile, frequently ferments certain carbohydrates, and may produce acid.

Coccobacillus fœtidus ozœnæ is the bacterial factor in the etiology of true clinical ozena.

The Abels and other organisms of the Friedlander group play no part in the tiology of clinical ozena and are purely saprophytic.

The coccobacillus of ozena is made up of many subvarieties or strains.

Coccobacillus fœtidus ozœnæ and bacillus bronchisepticus, the specific organism of canine distemper, are strikingly similar organisms.

Bacillus bronchisepticus and the coccobacillus of ozena should be grouped together.

A change in the name of the organism of ozena from coccobacillus fœtidus ozœnæ to bacillus rhinosepticus is proposed.

Vaccine therapy is the most promising of all methods in the treatment of fetid ozena yet suggested. Its value and limitations are similar to those of vaccine therapy in general in combating chronic local infections.

STUDIES ON TREPONEMA PALLIDUM AND SYPHILIS.

Zinsser, Hopkins and McBurney (*Journal of Experimental Medicine,* November, 1916), in experimenting with cultures of treponema pallidum report that agglutination tests were not specific enough to be used for diagnostic purposes. They found that while the serums of syphilitic patients, especially those in the tertiary stage, agglutinate culture of treponema pallidum to slightly greater extent than do those of normal subjects with diseases other than syphilis agglutinate it to an almost equal degree. They noted also that immunization with a culture of treponema pallidum, either local or general, does not seem to confer upon rabbits any considerable degree of resistance to inoculation with virulent treponemata.

PERSONAL AND NEWS ITEMS

Dr. John Todhunter died at his home in Bedford Park, London, last October, at the age of 77 years. He was born in Dublin. He was a noted literary writer, having produced a number of stories, a good deal of excellent poetry, and three plays.

Miss Mary Hamilton, of Glasgow, bequeathed $192,500 to the Western Infirmary, of that city; $60,000 to the Glasgow Royal Infirmary; $37,500 to the Victoria Infirmary, and a similar sum to the Hospital for Sick Children; $37,500 to the Association for the Relief of Incurables, and $50,000 to several other charities.

Sir Bertrand E. Dawson, M.D., has been elected Dean of the Faculty of Medicine of London University.

Robert Lafayette Swan died recently in Dublin at the age of 73. He was much interested in hospital work, and was a surgeon of rare skill and judgment. He was for some time president of the Royal College of Surgeons of Ireland.

It has been estimated, after a careful enquiry, that there are 200,000 drug habitués in the State of New York. Strong efforts are being made to control the vice.

Martin I. Wilbert, technical assistant in pharmacology in the United States Public Health Service, who died in Philadelphia on November 27th, had made for himself a unique place in the medical world. He was a pharmacist of unusual attainments, of the loftiest ideals, and of the most unremitting industry in his efforts to elevate pharmacy and medicine, an to bring them together on a higher plane of scientific accuracy.

A new contingent of the Harvard Surgical Unit left Boston last week for service in the British base hospitals in France. The party included six surgeons and twenty nurses, who will take the place of members of the unit whose service ends on December 9th. The surgeons in the new contingent are: Dr. Francis W. Palfrey, of Boston; Dr. Paul Hector Provandie, of Melrose; Dr. Forrest Fay Pike, of Melrose; Dr. Kendall Emerson, of Worcester; Dr. Henry B. Potter, of Wakefield, R.I.; and Dr. Chauncey N. Lewis, of Boston.

A campaign was begun recently to raise $250,000 for a year's care of the 5,600 children who were left paralyzed as a result of the poliomyelitis epidemic last summer in New York, and at a meeting held at the Hotel Manhattan to formulate plans for the work addresses were made by Dr. John S. Billings, Dr. John W. Brannan, Dr. Thomas J. Riley and Dr. Virgil P. Gibney.

Dr. Eugene Louis Doyen, of Paris, whose method of treating cancer by the injection of a serum attracted widespread attention a few years ago, died at his home after a brief illness on November 21, aged 57 years.

Announcement has been made of the gift of $500,000 from Mr. Julius Rosenwald, of Chicago, to the University of Chicago, for the proposed new medical school. As previously announced, the Rockefeller Foundation and the General Education Board have given $2,000,000 for the same purpose, and the remainder of the money necessary is to be provided by the University of Chicago and by private subscription.

Professor James Jamieson, of Melbourne, who died recently at the age of 76, was born at Beith, near Glasgow. He studied at the University of Glasgow, graduating M.D. in 1862, and C.M. in the following year. Some years later he went to Australia and settled in Warrnambool, where he practised for nearly ten years. In 1877 he migrated to Melbourne, where he took the degree of M.D. in 1878. In 1879 he was appointed lecturer on obstetrics and diseases of women and children in the medical school. He held that post till the end of 1887, when he was elected to the chair of medicine. Two years before he had been appointed physician to the Alfred Hospital. In 1885 he was appointed health officer to the city of Melbourne, a position which he held for twenty-seven years.

Dr. William T. Councilman, of Harvard University, and Dr. Robt. A. Lambert, of Columbia University, will accompany the expedition headed by Dr. Alexander Hamilton Rice, which will sail shortly for South America. The members of the expedition will make a topographical survey of portions of the Amazon valley and a study of the diseases of natives in those regions.

The National Board of Medical Examiners held its first examination at Washington, D.C., on 16-21 October last. There were thirty-two applicants from various colleges. Sixteen were accepted as having the requisite educational status, and ten of these took the examination, five passing. The next examination will be in June, 1917.

Lt. P. C. Garratt, son of the late Dr. A. H. Garratt, met with a serious accident some time ago while engaged in taking an aeroplane to France. His machine collidel with another and he was unconscious for some days.

Dr. J. McKay, of Woodstock, has been appointed to the position of medical officer to the 118th Battalion in Waterloo. For some time Dr. McKay was in England and was attached to the permanent medical board of the Canadian Expeditionary Forces.

Dr. A. K. Hayward, formerly assistant superintendent of the Toronto General Hospital, has been made commanding officer of the Convalescent Hospital at Exham. He has been in England for about two years.

Dr. John R. Irwin, of Cobourg, who has been in the R.A.M.C. and won the Military Cross, returned home recently.

Capt. (Dr.) H. H. Argue, sometime assistant superintendent of the Toronto General Hospital, recently won the Military Cross for bravery in action.

Dr. J. M. Rogers, of Ingersoll, is a candidate for partliamentary honors in South Oxford.

Dr. W. L. Whittemore (Capt.), grandson if Dr. William Oldright, or Toronto, has been awarded the Military Cross. He was wounded, but has recovered.

Dr. Harry Morell, formerly editor of the *Western Medical News*, has been doing splendid sanitary work in France. He was home on a short visit, but was at once recalled for duty.

The following have been elected to form the Medical Council of Saskatchewan: Dr. J. W. S. Miller, Battleford; Dr. G. A. Peterson, Saskatoon; Dr. J. F. Irvine, Yorkton; Dr. D. H. Wardell, Moose Jaw; Dr. D. C. Johnstone, Regina; Dr. H. E. Eaglesham, Weyburn; Dr. A. W. Argue, Grenfell.

There has been a good deal of agitation for better attendance upon families in the outlying districts of the Western Provinces. It has been shown that municipal hospitals would not meet the situation, as they would, in most cases, be too far away. A nurse in each district would be very helpful, but the main consideration is the stationing of doctors and paying them from the public funds.

The number of patients treated in the Montreal Maternity Hospital last year was 1,034. The number of maternal deaths was 12, and the baby mortality was 53.

An Edith Cavell Training School for Nudses has been opened in Paris. The hospital has accommodation for 100 patients.

It has been decided by the French Chamber of Deputies by a vote of 354 to 4 that soldiers must submit to the treatment laid down by the army physicians and surgeons.

Mr. C. C. Blackader has offered $5,000 to start a fund for the erection of a hospital in Halifax for the treatment of advanced cases of tuberculosis.

The annual meeting of the Ontario Medical Association will be held in Toronto from 31st May to 2nd June.

During the past year 935 patients were admitted into the Kitchener-Waterloo Hospital. There were 60 deaths and 71 births.

The Protestant General Hospital, of Ottawa, treated 2,944 patients. The cost of maintenance increased by the sum of $8,000, mainly due to the rise in the price of drugs.

During the year 576 patients were admitted to the Ottawa Maternity Hospital. The number of births was 544, and the maternal deaths were four.

The report of the asylums for Quebec shows that during 1915, 1,236 persons were admitted, and that at the end of the year 5,074 patients were confined in the five institutions.

The forty-nine hospitals of the Province of Quebec admitted in 1915 a total of 41,755 patients.

The Board of Health for Manitoba has decided that all dairies of two or more ciws must be inspected; that basements must be discontinued as dwellings or workshops; the use of hydrocyanic acid as a germicide must be given up; and that more active measures be taken to lessen infant mortality in outlying districts.

Building operations are in progress on the Kootenay Lake General Hospital. It will accommodate 64 patients.

Lt.-Col. F. G. Finley, C.A.M.C., of Montreal, has been appointed consulting physician to the Canadian hospitals in England.

Dr. Charles Valery, of Edmonton, has been awarded the silver medal of La Societé de Secours aux Blessés Militaires. Dr. Valery some time ago received the French War Cross for bravery under enemy fire.

The Distinguished Service Order has been conferred on Lt.-Col. Harry M. Jacques, C.A.M.C., a graduate of McGill, for efficient service at the dressing station and skill and courage under trying circumstances.

Dr. J. T. Gilmour, warden of the Central Prison, Toronto, and latterly of the Guelph Industrial Prison Farm, for the past 21 years, has been appointed inspector of paroled prisoners for Ontario. The object of the appointment is to follow up these prisoners and keep in touch with them. Dr. Gilmour has paid much atention to criminology. He was elected president of the American Prison Association. He graduated from the University of Toronto in 1878.

Five thousand pounds were left by the late Mrs. Catherine Nash, an Eastbourne lady, to the Middlesex Hospital for a ward to be named after her husband, the late Mr. Robert George Nash. She also gave five hundred pounds to the Medical Benevolent Fund.

A young nurse in Kingston General Hospital proved herself a heroine. A patient was being wheeled into the elevator on a carriage, when through some blunder below the elevator began to slowly move downwards. Miss Olive Anderson, of Lindsay, junior nurse, who was near by, with great presence of mind quickly pushed the carriage into the elevator cage, which came down a hairbreadth from the patient's head. But before the brave nurse could withdraw her arm the steel top of the door crashed down upon her hand, and she suffered agonies for a quarter of an hour. Doctors, nurses and military men worked their hardest to get the elevator up an inch, but it refused to budge. Finally the cage was forced up, and the nurse was looked after by leading surgeons, who reported that her hand will be saved.

Capt. Theo. Coleman, a London cablegram announced, was married at Seaford, England, yesterday, to Edythe Milner, a relative of Lord Milner. Capt. Cosby, of Winnipeg, was best man. Capt. Coleman is well known in Toronto and Hamilton, where he practised as a physician. He was the husband of the late Katherine Blake Coleman, who was known throughout Canada by her nom de plume of "Kit," and who was for many years a member of the staff of *The Mail and Empire*. Mrs. Coleman died several years ago at Hamilton.

The total German casualties, excluding those in the naval and colonial services, reported in the German official lists for November, says a British official statement issued recently, was 166,176 officers and men, making the total German losses in killed, wounded and missing since the war broke out 3,921,860.

The Canadian Red Cross are asking for another probe into the food supplies at Taplow Hospital. Serious allegations are made, and the matter is now engaging the attention of the authorities. It will be recalled that Sergt. Gillies was sentenced to two years' imprisonment for irregularities at this hospital.

Major (Dr.) D. V. Warner, of Nova Scotia, who has been seriously ill in hospital, is making rapid recovery.

The Baptie Commission, appointed to enquire into the medical situation, has concluded. The evidence and the finding will be issued without delay. There are many speculations as to the committee's decision, but it is reported that Dr. Bruce's report has not been upheld.

Grace Hospital was reopened on 10th December. Two weeks previously it had a fire that did about $6,000 worth of damage. The night the fire broke out there were 115 patients in the hospital. These were all removed safely by the fire escapes, and no one sufferd injury.

Dr. Mlville H. Embree, son of L. E. Embree, LL.D., formerly principal of Jamieson Avenue and Jarvis Street Collegiate Institutes, has

returned to Toronto to recuperate after his illness. He has been in the R.A.M.C., and intends going back to duty again.

Dr. A. M. Stimson, assistant director of the hygienic laboratory, was assigned by the public health service to collaborate with physicians at Rochester, Minn., who think they have isolated the infantile paralysis germ. Dr. E. C. Rosenow, of the Mayo Foundation, Rochester, Minn., is confident that he has isolated the germ of infantile paralysis, and is showing the bacteria on lantern slides and motion pictures.

Canadian casualties since the outbreak of the war total 75,660, made up as follows: Killed in action 10,333; died of wounds, 3,825; died of illness, 536; presumed dead, 1,072; wounded, 47,187; missing, 2,707.

Dr. Catherine Hutchison Travis, of Hampton, N.B., a graduate of McGill, took part in the retreat of the Serbian army in 1815, and saw active military service at the time. She was in Serbia trying to control the epidemic of fever.

Up to the end of November total contributions to the Canadian Patriotic Fund exceeded the total expenditure by about $3,000,000, was the report made to the meeting of the National Executive Committee of the fund under the chairmanship of his Excellency the Governor-General and attended by delegates from different parts of Canada.

A canvass was made in Cobourg for funds for the hospital. This resulted in raising $630.

The Woman's College Hospital, of Toronto, held its annual meeting recently. The statement was made that building operations would likely be commenced in the spring.

Col. F. W. Marlow, A.D.M.S., Toronto, has announced the selection of three medical officers who will proceed overseas immediately. They are Capt. W. W. Wright, who for some time has been attached to the Convalescent Home, and Captains C. C. Ballantyne and W. A. McDonald, of the Army Medical Training Depot. The former is an eye specialist, while the two latter will treat ear, nose and throat cases.

Dr. John Crombie Burt, who left Toronto many years ago and was thought to be dead, returned to the city recently. He has been residing in the Western States.

Dr. J. D. McLean has been made Minister of Education and Provincial Secretary in Premier Brewster's Cabinet.

Some months ago Dr. G. W. Orchard, of Windsor, fell into an excavation which was made by the city. He brought action against the municipality and was awarded damages for $500.

The Ontario Government has decided to enlarge the hospital at Orpington. This action is the outcome of a request for more accommodation.

Dr. Peter Livingstone, an old Middlesex boy, but living and practising in Detroit, died recently of cerebral hæmorrhage. He was in his fiftieth year .

The Fourth General Hospital of London, located at Denmark Hill, has accommodation for 1,860 beds. It consists of the King's College and Maudsley Hospitals and a number of additional pavilions. It has always been a favorite with Canadians.

OBITUARY

ANDREW R. GORDON.

Lieut.-Col. Andrew R. Gordon died at his home in Toronto on 17th December past. He was the fifth son of the late Rev. Donald Gordon, and was born in the county of Glengarry in 1863. He studied in St. Mary's Collegiate Institute and graduated from the University of Toronto with honors in 1890. After graduation he settled in Toronto, where he built up a large practice. For many years he was an associate professor of clinical medicine in the medical faculty of the University of Toronto, and one of the attending physicians on the staff of the Toronto General Hospital. In 1912 he spent the greater part of the year with Sir James McKenzie, of London, devoting his time mainly to diseases of the vascular system. On his return to Toronto he specialized this branch of medical practice. In 1914 he offered his services of overseas medical work, and went with the University of Toronto Base Hospital, first to England and later to Saloniki. It was while in the latter place that his health broke down and he was compelled, most reluctantly, to return. It was ever a keen regret to him that he was not able to resume his duties in aid of the sick or wounded soldiers. While a student he was very fond of all athletic sports and took a keen interest in them. Lieut.-Col. Gordon is survived by his widow, a son, Lieut. A. R. Gordon, C.M.T.C., and a daughter, Margaret Helen. Three brothers, who are all on active service, also survive. One of them is Major C. W. Gordon, "Ralph Connor," the well-known writer and poet; the other two are Col. J. R. Gordon, of Sudbury, and Lieut.Col. Henry Gordon, C.A.M.C. Capt. Athol Gordon, a nephew, is also on active service overseas. The late Lieut.-Col. R. M. Thompson, of Winnipeg, who was killed in the advance on the Somme on December 8th, was a brother-in-law. The funeral was a military one, the pall-bearers being Col. F. W.

Marlow, Lieut.-Col. C. A. Warren, Lieut.-Col. H. B. Anderson, Lieut.-Col. I. H. Cameron, Lieut.-Col. T. B. Richardson, and Lieut-Col. A. Primrose. The funeral service was held in Bloor Street Presbyterian Church, of which he was a member, and was conducted by the Rev. W. G. Wallace, D.D., and Rev. Dr. G. C. Pidgeon.

The late Dr. A. R. Gordon had many splendid qualities, of both head and heart, and won for himself an enviable place in his chosen profession.

MAJOR R. K. KILBORN.

Major R. K. Kilborn, M.D., died at his home in Kingston on 3rd December. He was born in Frankville, county of Leeds. He studied in Queen's University, Kingston, and graduated in 1879. He practised his profession in Cleveland till 1891, when he returned to Kingston to take up the position of superintendent of the General Hospital. For the past 17 years he had been medical officer of the Royal Military College. He is survived by his widow and one daughter.

J. A. CULLUM.

Dr. J. A. Cullum, of Regina, was killed in action on the Somme a short time ago. He had won a number of honors, medals and crosses for bravery and efficient service, and was recommended for the highest of all—the Victoria Cross. He was a skilful surgeon and an ideal family physician. He took an active interest in local medical societies, where he always commanded close attentian. He was of a quiet manner that begot respect. He lived a blameless life and died gloriously

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F. R. CHAPMAN.

Dr. Chapman, of Saskatoon, died 29th August, as the result of an accident, by taking carbolic acid by mistake. He was born in 1880, and graduated from the University of Toronto in 1908.

CYRUS ROSS MacINTOSH.

Dr. MacIntosh, of Creelman, Sask., died 24th August last, at the age of 35 years. He was an Arts graduate of Dalhousie University, Halifax, and M.D. of the University of Manitoba in 1908.

LIEUT. T. W. McKNIGHT, R.A.M.C.

Dr. McKnight died at Bombay, Sept. last. He was born in Tamworth, and graduated B.A. in 1910, and M.D. in 1912, from Queen's University. He practised in Everett for some time, and then joined the R.A.M.C., being assigned duties in the military hospital at Bombay.

GEORGE SANSON.

Dr. Sanson was a practising physician at Vernon, B.C. He died at the Victoria Hospital, Victoria, 5th September. He was educated in the Toronto School of Medicine and fraduated from Victoria University in 1886.

JOHN MacKENZIE.

Dr. John MacKenzie, of Mulgrave, N.S., died 29th October. He was born in Cape Breton of Scottish parents, and obtained his medical degree from Dalhousie University in 1884. He built up a good practice in Mulgrave, where he was much respected.

F. WHYBRA.

Dr. Whybra died at Prince Albert, Sask., on 30th October, in his 46th year. He was born at Niagara Falls, and practised for some time at Stevensville, Ontario.

THOMAS MASSON.

Dr. Thomas Masson, of Cape Vincent, New York, died 26th October. He was a native of Northumberland, Ontario, where he was born in 1851. He graduated from Queen's University in 1871. He had practised in Cape Vincent since 1875.

J. J. MULLIN.

Dr. Mullin died in Montreal on 28th September, in his 39th year. He graduated from McGill University in 1906. He practised for some time in Victoria, B.C., until his health failed.

CAPT. FRANCIS S. WALCOTT.

Dr. Walcott, C.A.M.C., was killed in action on 6th October. He was a graduate of McGill University of 1915.

BOOK REVIEWS

CONSTIPATION, OBSTIPATION AND INTESTINAL STASIS.

Constipation, Obstipation and Intestinal Stasis. By Samuel Goodwin Gant, M.D., LL.D., Professor of Diseases of the Colon, Sigmoid Flexure, Rectum and Anus in the New York Post-Graduate Medical School and Hospital. Second edition, enlarged. Octavo of 584 pages, with 258 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Cloth, ..6.00 net; half morocco, $7.50 net. Canadian agent, the J. F. Hartz Co., Ltd., 24-26 Hayter St., Toronto.

This volume contains chapters on the anatomy of the parts concerned, their physiology, the etiology of constipation, mechanical causes, the diagnosis, dietetic treatment, educational treatment, the surgical and medicinal treatment, and many other features of the condition. he book is copiously illustrated, and the stock is a very fine grade of quoted paper. The printing and binding is first-class. These 584 pages contain a very full and scientific examination of the subject of constipation. It is a work that should obtain a large sale, as it truly merits such. The author has literally lived into his subject, and has gathered into his book the fruit of previous writers. To these he has added the results of his own close and painstaking studies. Though the book is a large one, there is remarkably little repetition. While there is much that is collected from other writers there is muc hthat is original, and this part we specially praise.

SYPHILIS.

By Lloyd Thompson, Ph.B., M.D., Physician to the Syphilis Clinic, Government Free Bath House; Visiting Urologist to St. Joseph's Hospital; Consulting Pathologist to the Levy Memorial Hospital, Hot Springs, Arkansas; First Lieutenant, Medical Reserve Corps, United States Army; Member of the American Urological Association of Immunologists. Illustrated with 77 engravings and 7 plates. Philadelphia and New York: Lea & Febiger, 1916.

Syphilis is a subject that has engaged the attention of many writers and investigators. Recent researches have brought about a recasting of our views on many points. The discovery that the disease could be given to lower animals has led to many advances. The author takes up the history of the disease, its importance, the etiology, the pathology, clinical history, slinical diagnosis, laboratory diagnosis, prognosis, prophyllaxis and treatment. These chapters are followed by others on syphilis of the different systems, These, again, by congenital syphilis. With regard to the origin of the disease, a considerable weight of evidence is adduced to show that it existed among the ancients, and was known prior to the discovery of America. On treatment the author thinks that salvarsan is more potent in clearing up syphilitic lesions than mercury. He ad-

mits that mercury is capable of so completely curing the disease that many syphilitics have attained old age without return of the disease, or any manifestations of it. The author attaches much importance to the disappearance of the reaction as a test of the superiority if salvarsan over mercury. But this may not be a true guide, as the salvarsan may have the power of compelling the organism to assume a form less active and with a negative reaction; but the organism is still alive and capable of becoming again active. This treatment has been in use too brief a period to enable the medical profession to arrive at definite conclusions. Taking all parts of this work into careful consideration, one is bound to state that it presents a full and careful exposition of the disease, and what the author states may be accepted as sound. The work may be cordially recommended.

PROGRESSIVE MEDICINE.

A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., and Leighton F. Appleman, M.D. Vol. IV., December, 1916. Philadelphia and New York: Lea & Febiger. Price, paper, $6.00 per year.

The volume contains articles on diseases of the digestive tract, by E. H. Goodman; on Diseases of the Kidneys, by J. H. Austin; on Genito-Urinary Diseases, by C. W. Bonney; on Surgery of the Extremities, etc., by J. C. Bloodgood, and Practical Therapeutic Referendum, by H. R. M. Landis. There has been collected under these various articles much very useful information, and the authors throw upon these topics their own experiences. This volume maintains the unusually high standard attained by this series. The very best progress in medicine and surgery is found in Progressive Medicine.

EXTRA-OCULAR PRESSURE AND MYOPIA.

By Islay B. Muirhead, M.D., London, John Bale, Sons and Danielsson, Oxford House, 83-91 Great Titchfield Street, Oxford Street, W., 1916. Price, 3s 6d net.

The author of this little book offers a carefully prepared argument in favor of his view on the causation of myopia. He combats the old theory that myopia is the result of extra-ocular pressure arising from the use of the muscles in near work. Against this view he contends that myopia is more common among savage races and tends to become much less common among the higher races. From this, the author reasons that near work would correct rather than cause myopia, by pulling the eye backwards and inducing compression, and consequent flattening of the fundus. The whole argument is ingenious and worthy of close study. We are inclined to think the author is right.

MISCELLANEOUS

THE MEDICAL BOARD REPORTING ON COL. H. A. BRUCE'S REPORT.

Sir George Perley, Minister of Overseas Service, took an important step regarding the report upon the Canadian medical services made by Colonel Bruce, of Toronto, and the reply thereto of Gen. Carleton Jones, Director of Medical Services. Sir George referred both the documents to a board of inquiry, of which Surgeon-General Sir William Baptie acted as president. He was selected at Mr. Perley's request by the Director-General of the Imperial Medical Corps. The other members of the board were: Col. E. C. Ashton, G.O.C., Shornecliffe; Gen. J. T. Fotherinham, of Toroto, A.D.M.S., of the Canadian Second Division; Col. A. E. Ross, of Kingston, A.D.M.S., First Division; Lieut.-Colonel J. M. Elder, of Montreal, Third Canadian Hospital, Boulogne. This board was requested to assemble immediately and report with the utmost despatch and were specially requested to hear the evidence of Colonel Bruce and General Jones.

WAR CHARITY MILLIONS.

Estimates completed for the first two years of the war show that the enormous sum of $250,000,000 has been raised in the British Empire for charities growing out of the world conflict.

Of this amount more than $100,000,000 has been contributed for the relief of distress and the re-establishment of men returning to civil life. The Prince of Wales Fund is perhaps the greatest of the public charities dealing with distress. About $60,000,000, however, has been raised in factories, banks, offices and various business establishments through weekly contributions for the assistance of families and dependents of employees who have gone to the front. Part of such funds is, of course, being reserved for relief work after the war.

For sick and mounded soldiers and sailors the contributions are estimated at $30,000,000, most of which has been raised and administered by the British Red Cross. Another $30,000,000 has been spent for soldiers' "comforts," such as tobacco, mufflers, pipes, socks, mittens, gloves, sweaters, safety razors, writing materials, chocolates and sweets.

It is estimated that fully $50,000,000, contributed in the Empire, has gone for relief work among the Allies, the largest amount going to

Belgium. Relief among the Belgian refugees in Great Britain also has called for large expenditures.

ONTARIO'S VITAL STATISTICS.

Though infantile paralysis was curbed, the Province had another worry in the spread of diphtheria. During the past month, reports to the Provincial Board showed 467 new cases, or nearly twice the number in November a year ago. The only reassuring feature of the increase was that the mortality rate was small—about six per cent. Measles was still prevalent, although away below the total cases a year ago when the Province was suffering from an epidemic.

The detailed returns for November show:

	1916.		1915	
	Cases.	Deaths.	Cases.	Deaths.
Smallpox	1	0	10	0
Scarlet fever	85	0	97	0
Diphtheria	467	28	283	17
Measles	515	3	1,113	9
Whooping cough	91	4	38	3
Typhoid fever	74	11	61	12
Tuberculosis	132	56	107	64
Infantile paralysis	10	2	2	1
Cerebro-spinal meningitis	8	1	7	5
	1,383	105	1,713	111

UNIVERSITY OF TORONTO MEDICAL GRADUATES.

At a special convocation on 11th December last 47 received the degree of M.B.: James Franklin Adams, Hanover; Frederick Grant Banting, Alliston; William Wray Barraclough, B.A., St. John, N.B.; Henry Norman Bethune, Toronto; Thomas Wilmot Bleakley, D.D.S., Kindersley, Sask.; Frank Herbert Bonne, Toronto; Arthur John Boyce, B.A., Goderich; William Easson Brown, Toronto; Beaumont Sanfield Cornell, Athens, Ont.; Daniel Irwin Davis, Port Coquitlan, B.C.; Gordon Murray Dobbin, Toronto; John Sutherland Douglas, Dunnville; Hugh Alexander Elliot, B.A., Midland; Charles Farquharson, Agincourt; Douglas Gordon Findlay, Toronto; Donald Roderick Finlayson, Lucknow; Chas. Elias Frain, Norwich; Ruggles Kerr George, B.A., Toronto; Joseph Appelbe Gilchrist, B.A., Toronto; Malcolm George Graham, Rodney;

Albert Robert Hagerman, Parkland, Alta.; Roy John Hardstaff, M.D., West Devonport, Tasmania; Frederick William Watts Hipwell, Alliston; Edgar Duncan Hutchinson, Sarnia; William George Jamieson, Camborne; Andrew Murray Jeffrey, Toronto; Frederick Macnab Johnson, St. Thomas; Wilfred Joseph Johnston, Craigvale; Cecil Vernon Mills, Corunna; Harold Alexander Mitchell, B.A., Vancouver, B.C.; Albert Montgomery, Toronto; Hector Clive McAllister, Ridgetown; James Clarence McClelland, Toronto; John McWilliam McDonald, Lakeside; Charles Spurgeon Macdougall, Kincardine; Angus MacKay, Woodstock; Robert MacKinlay, Aberarder; Fred Schlenker Parney, Edmonton, Alta.; Thomas William Parker Peacock, Stroud, Ont.; George Raymond Scott, Peterboro; Willmot Edward Lennox Sparks, Toronto; William Pelton Tew, Oil Springs; Newton Oscar Thomas, B.A., St. Thomas; Charles Everett Thompson, Hamilton; Arthur Thomson, M.A., Toronto; Hugh Duncan Veitch, Winterbourne, Ont.; Thomas Esmond White, Hamilton.

REPORT OF THE PROCEEDINGS OF THE STATED MEETING OF THE ACADEMY OF MEDICINE, TORONTO, DECEMBER 5th, 1916.

Professor V. C. Vaughan in his address upon the subject "The Protein Poison and its Relation to Immunity and Disease," at the December meeting of the Academy of Medicine, discussed the position of the bacteria among living things. According to our conception and definition of vegetable life, we cannot consider bacteria to belong to this group—no cellulose is present—neither do they belong to the animal group. They must be placed in a group of their own.

They contain, instead of a nucleoproteid, a glyco-nucleo proteid. In the study of the chemistry of bacteria the colon bacillus has been used in a large series. Finding that this bacteria, when dead, is toxic to animals, an attempt was made to separate the poisonous from the non-poisonous part. The poisonous part is soluble in alcohol, and either the non-poisonous is insoluble in alcohol.

Further study was made to find whether non-pathogenic bacteria likewise contain a poisonous and a non-poisonous substance. This was found to be true.

Further attempts were made to find out whether a similar poison was found in the higher nucleo proteids of animal cells, and later vegetable proteins, gluten of wheat, etc., were studied and proven to contain the same poisonous substances.

Every true protein contains a poisonous substance and whatever the source of the protein, the poison is similar.

Those with the larger content of the protein poison are the proteins of our daily food. Casein contains, perhaps, the highest proportion of the protein poison. It is not a poison when administered by the mouth. It is dialysable, but dialyses very slowly, and is absorbed very slowly from the intestine. It is split up into harmless amino acids by the digestive ferments. While not exactly alike from all its sources, its effects on animals is similar in its lethal proporties.

The symptoms and lesions of disease are not due to the growth and multiplication of the infective bacteria in the body. For (1) they are rapidly growing during the stage of incubation when neither symptoms or lesions are present, and (2) dead bacteria injected into the blood stream cause the same lesions, *e.g.*, in typhoid dead bacteria will cause all the ulcerative processes.

The strong, vigorous man elaborates substances which kill the invading bacteria. With heavy dose and great resistance the bacteria are rapidly killed and the protein poison sets up acute symptoms. In a study of the records of typhus and typhoid epidemics from those in England and Ireland 200 years ago down to personal investigations in the American army in 1898, it is an outstanding fact that the case mortality is greater in the strong and vigorous than in the weak and feeble. The case incidence is greater amongst men than women, in young adults than older adults. In Ireland many years ago it was shown that amongst the poor half-starved peasants the case mortality was 1 in 23. Amongst the physicians, nurses, priests and social helpers the mortality was 1 in 2.

The dead bacillus of a species to which an animal is immune rapidly kills the animal from the rapid setting free of the toxic substances. The dead bacillus of a species to which the animal is non-immune does not rapidly kill the animal, but it grows in the animal without the rapid killing and setting free of the protein poison. In the period of infection of an acute infectious disease there are not symptoms, but during the invasion and fastigium, the invading bacteria are being destroyed, toxins are set free and the stage of symptoms has arrived. With leucocytosis active there is less toxin set free and symptoms are definitely less.

The subject of anaphylaxis was discussed in short and it was pointed out that when a patient is susceptible to horse serum or diphtheria antitoxin, the injection of one minim will overcome this and in a few hours any quantity may be injected without danger.

Professor Vaughan pointed out that the protein poison is a poison, not a toxin. There is no antidote. It does not form an antitoxin.

Vaccines may stimulate protective substances to overcome a localized lesion, but the use, for example, of tuberculin in cases of extensive pulmonary disease seems rash, unscientific and doubtless does much harm in many cases.

The use of vaccine in a patient who is weak, *e.g.*, in advanced myocardial disease, is to be deprecated. The setting free of the protein poison may cause disastrous results.

In closing, Prof. Vaughan illustrated his lecture by lantern slides, showing the construction of the large tanks in which he grows his bacteria for chemical study, and a series of charts illustrating the febrile reaction in animals subjected to subcutaneous and intravenous injections of various protein substances, bacillary and non-bacillary in origin.

The paper was discussed by Prof. Hunter, Prof. J. J. Mackenzie, and Major Fitzgerald.

J. H. Elliott, Hon. Secy.

MEDICAL PREPARATIONS

PARKE, DAVIS AND COMPANY'S JUBILEE.

This company has issued a handsome booklet setting forth the growth of the company for the fifty years from 1866 to 1916. The early struggles of the company are mentioned from the time when Dr. Samuel P. Duffield opened a drug store in Detroit. To this he added a manufacturing business. In 1866 Hervey C. Parke was induced to join Dr. Duffield, and the firm began to take an a permanent form. A year later Mr. George S. Davis joined the firm. Mr. Davis was a creative genius, while Mr. Parke was highly adapted to win trade, and his financial strength carried the company along.

For a number of years the company encountered many difficulties; but the partners would not own defeat. By the year 1873 they had moved into a new building on their present site. Then came the years of great depression, through which the firm was carried by the determination of its members. The year 1877 marked the turning point, when the first profit was made. From this date onwards the growth of the firm was steady and rapid.

Research work was now added to the usual line of trade. Such

drugs as Viburnum Prunifolium, Guarana, Eucalyptus, Coca, Jaborandi, Grindelia Robusta, Jamaica Dogwood, Saw Palmetto, Convallaria, Pichi, Cocillana, Kamala and Areca Nuts were introduced to the medical profession. These were followed by others, such as Cascara Sograda and Tonga. The securing of the supply of Tonga was a most interesting event, and reads more like a romance than a scientific event.

The vegetable drugs just mentioned are only a few of those introduced by the firm of Parke, Davis & Company. One of their achievements was the standardization of drugs. Another secret of the company's success was the frank manner in which it gave its discoveries to the world. Nothing was held back.

In 1894 the first beginnings were made in the Biological Laboratories. From these laboratories came antitoxic serums, bacterial vaccines, tuberculins, etc. The farm fir the horses, rabbits, dogs, guinea-pigs, etc., required in the research work and the productions of the biological remedies contains seven hundred acres. It may be interesting to note the production and perfection of thyroid gland extract, preparations of the suprarenal glands, piluitrin, and a number of others. But it would be impossible to mention all the preparations this firm has been intrumental in adding to the armamentarium of the doctor.

The company has now many branches in the leading United States cities; also in South America, Mexico, Canada, Britain, Australia, Russia, India, and other places.

THE SEQUELAE OF LA GRIPPE.

Among all of the various acute and exhausting illnesses that afflict mankind, there is nine that so generally results in distinct prostration as epidemic influenza, or la grippe. Even the grippal infections which are uncomplicated or unaccompanied by serious organic changes are more than apt to leave the patient in a thoroughly devitalized condition after the acute febrile symptoms have subsided. It is for this reason that the treatment of la grippe convalescence is of special importance. The anemic, debilitated, depressed patient requires a systematic "booster" that will not only stimulate but revivify and reconstruct. It is distinctly wise, in such cases, to commence vigorous tonic treatment as early as possible, preferably by means of Pepto-Mangan (Gude), the hemic builder and general reconstituent. This standard hematinic increases the vital elements of the circulating blood and by increasing the appetite and improving the absorptive and assimilative functions, quickly restores both hemic and general vitality.