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Original Communications.

THE TREATMENT OF PYOTHORAX, AND THE MECHANICAL RESULTS OF OPENING THE PLEURAL CAVITY.*

BY ANDREW H. SMITH, M.D., NEW YORK,

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(Continued from November Number.)

But to return to our subject; the degree of expansion which would be maintained in this motionless condition of the lung would depend upon the frequency and force of the respirations, the elasticity of the lung tissue, the character and quantity of the secretion from the bronchial surfaces, and, more than all, upon the action of the glottis. Just in proportion as this is valvular, facilitating the ingress and impeding the egress of the air, just in that proportion, *cæteris paribus*, will the distention of the lung be greater.

If now we proceed to decrease the size of the wound still further, we shall find the rôle which expiration has played as a distending agency is gradually transferred to inspiration. With each progressive step the increasing difficulty with which the air finds admission through the wound results in an increased supply by the trachea, and a greater distention of the lung.

In like manner, the removal of the air from the lung, which before was accomplished by inspiration, has now become the office of expiration. As the chest contracts, the pressure of the air within it upon the lung is more and more decided as the opportunity of escape through the wound is more and more diminished, and thus the amount of air

remaining in the lung at the close of expiration constantly becomes less.

Thus we see that the lung is gradually escaping from the influence of the movements of the opposite thoracic cavity, to which it was at first entirely subjected, and is resuming its proper relations to the movements of its own side; and at last, when we reach the point of complete closure of the wound, we shall find that the quantity of air passing into, and out of the lung, exactly corresponds to the expansion and contraction of the cavity in which it is contained. There will then occur with expiration that complete collapse of the lung which took place with inspiration at the other end of the scale, and which could not occur at any intermediate point; while the maximum of inflation, which then coincided with complete expiration, is now observed at the termination of inspiration.

This change in the mechanism of the respiration is accompanied by a notable change in its physiological result. While the rising and falling of the lung was merely the result of the action of the uninjured side, not only was it of no avail in deparating the blood, but the action of the other lung was also impaired, since the crippled lung served merely as a reservoir into which its fellow breathed a portion of its vitiated air, to inhale it again at the next inspiration. But the moment the expansion and contraction of the lungs becomes synchronous on the two sides, this abnormal action ceases.

Hence, the difference in the degree of dyspnoea caused by a large and a small wound, though the play of the lung may be the same.

My views, then, as to partial collapse of the lung, may be summed up as follows:

There is a certain size of wound which results in a condition of partial and continuous inflation of the lung, to which both inspiration and expiration contribute.

A wound larger than this causes a greater degree of inflation during expiration, and a less degree during inspiration, the disparity increasing with the size of the wound.

A smaller wound causes a greater degree of inflation during inspiration and a less degree during expiration, the disparity increasing in proportion to the diminution of the wound. Complete collapse can occur only when the wound is very large, or when it has become entirely closed, with the

*Read before the Ontario Medical Association, June, 1890.

cavity of the chest filled with air. In the former case, it continues only during inspiration; in the latter, only during expiration. These conclusions do not apply to those cases in which the wound has a valvular character, nor, without modification, to those in which air is escaping from a wounded lung into the pleural cavity.

A wound in the thorax, which affords greater facility for the entrance than for the exit of air, will cause an accumulation within the pleural cavity and consequently pressure upon the lung, and a greater or less degree of collapse of the latter. On the other hand, a valvular wound which favors the egress rather than the ingress of the air, will tend to a greater degree of inflation of the lung, than would occur if the wound were not valvular. So much for the behaviour of the lung when the thorax is opened in the healthy subject. But the case is quite different under the conditions which are present in empyema. Here we have the lung compressed to a greater or less extent by the effused fluid, in fact it may be reduced to a small fleshy mass, almost impervious to air. In addition to this it is covered by a more or less dense, unyielding pyogenic membrane formed from and upon the pulmonary pleura. It will be seen, then, that the conditions are unfavorable to the re-expansion of the lung, and just in proportion as these conditions are well marked will such re-expansion be imperfect, if not impossible.

Now, what is the mechanism by which expansion more or less perfect is obtained when the chest has been freely opened? We have removed the fluid from the thorax with a freedom proportioned to the size and character of the opening, and with it have removed the force by which the lung was compressed. We have made an opening through the chest wall which nullifies the effect of the respiratory movements of that side. The lung, then, is apparently removed from the operation of any force which could affect it either to compress or distend it. How then is it to regain its function even ever so imperfectly?

To the solution of this problem nature brings two new forces, which together are capable of producing remarkable results. One of these we have in a measure considered. This is the distending force of the air driven from the sound lung into its disabled fellow. In ordinary respiration this amounts to but little, but in the act of

coughing the force exerted is very considerable. Now, in these cases cough is always present, and thus at short intervals the sound lung is fully inflated, the glottis is closed, the expiratory muscles on the sound side are brought into special activity, and air is driven with force into the collapsed lung. In this way air passages long closed are opened up, adhesions confining the lung are little by little overcome, the thickened and rigid pulmonary pleura is stretched and thinned, and the way is prepared by which under the influence of the second force the lung may gradually be brought into a fairly active condition.

But this inflation of the compressed lung by the aid of the sound one, is antagonized to some extent by the reverse action which takes place in inspiration. With each expansion of the sound side the pressure within the affected lung is diminished, and a tendency to greater collapse is produced. This might be obviated by a different arrangement of the opening in the chest, as we shall see further on.

The second agency in distending the lung is the constantly advancing adhesion of the two pleural surfaces. During the presence of the fluid the summit of the lung is usually adherent to the chest wall, and after the fluid is evacuated the line of adhesion advances steadily downward, provided it is not interfered with by untoward influences. The process is similar to what we see when a burn affects the adjacent surfaces of two fingers. Union of the two granulating surfaces begins at the basis of the fingers and advances slowly towards the tips, resulting in a connecting web. So, too, in syphilitic ulceration of the throat, a line of adhesion forms between the soft palate and the wall of the pharynx, and advances gradually from the sides toward the centre.

In the case of the lung becoming thus adherent to the chest wall, it is forced to partake of the movements of the latter, and is pulled open with every inspiration, instead of being distended as in health by pneumatic pressure. It is as if the india-rubber bag, in this apparatus, were glued to the inside of the bellows.

In favorable cases, that is to say, in cases in which the compression has not lasted too long, and the adhesions which bind down the lung are not too strong, the expansion under the operation of these two forces may be complete. But

may contribute still farther to this result by using drainage tubes so arranged with valvular openings as to give free egress to the air while impeding its entrance. Such tubes are easily prepared by closing the outer end and cutting a tongue on the side of the portion which is to project from the chest. Even though the tube may not fit accurately in the wound, and air may pass beside it, still this valvular arrangement will have some effect in lessening the internal pressure and thus favoring expansion of the lung. Indeed, unless such tubes are employed, I should condemn entirely the method by drainage tubes as distinguished from the free incision. It is easy to see that with a small opening the comparatively long inspiration would fill the cavity with air which would not readily escape in the shorter time allowed for expiration, and that thus there would be a pressure upon the lung during expiration which would tend to strip it from its newly formed adhesions to the chest wall. And, inasmuch as complete adhesion of the pleural surfaces is the condition upon which the abscess is gotten rid of, this adhesion must above all things be promoted.

It is usually necessary, however, to resect a portion of rib, in order to maintain a sufficiently large opening for the drainage tubes, and in old and neglected cases in which the lung is not likely to expand fully, it is probably better to remove enough bone at the first operation to allow the necessary falling in of the chest. But in any case, the opening made in the first instance should be large enough to secure the removal of any fibrinous masses which may be floating in the pus. These masses are sometimes quite large, and if retained in the abscess cavity are likely not only to obstruct the drainage, but by their decomposition to give rise to sepsis.

A sufficiently large opening having been made, it should be kept open by the insertion of two or more large valvular drainage tubes placed side by side. Granulations form rapidly around and between the tubes, and soon close all the exterior space. The air then finds but scanty entrance into the cavity, and with each inspiration an expanding force is exerted upon the compressed lung. At the same time in coughing, laughing, etc., the air within the cavity is readily driven out through the valvular openings and thus opposes no obstacle to the expansion of the lungs. We

thus have the resources of nature conserved to the greatest degree possible and applied to the expansion of the lung. But I believe that we may go still farther, and so assist nature as to obtain, even in the most unfavorable cases, more favorable results than could otherwise be secured. The distending force derived from the sound lung may be employed at pleasure by the patient, and he has it in his power to graduate this force according to the sensations produced in the lung. Let him then be instructed to take a deep inspiration, close the nostrils, and make a long steady expiratory effort, so regulating the force of this effort as not to cause any considerable pain in the affected lung.

This procedure may be repeated many times each day, and unless the air-tubes and air-cells are entirely obliterated there can scarcely fail to be a gradual inflation of the compressed lung.

And now a few words in regard to washing out the cavity. A common error is that of using antiseptic solutions of such strength as to impair the vitality of the delicate connective tissue which is the immediate agent in effecting the union of the opposing surfaces. Such solutions, applied often, also with too much pressure, are responsible for many failures to secure the best attainable results. They are also liable to produce poisoning by absorption into the circulation. This is especially true of carbolic acid, which cannot be used in any efficient strength without danger, and should therefore be discarded entirely. Time will not permit a consideration of the various disinfectants that may be employed in the comparatively rare cases in which their use is indicated. It is only when the temperature and the condition of the discharge give evidence of the presence of septic material that antiseptics should be employed. Bowditch found washing out the chest necessary in one case in 399 operations. If the discharge has an offensive odor, irrigation of the cavity with simple boiled water, or with a solution of mercuric bichloride in the proportion of one to ten or twenty thousand, or with creoline one to 500 or 1,000, will usually suffice. These fluids must be introduced with very slight pressure, and the greatest care must be observed to secure ample outlet for the return current.

SCROTAL TUMORS.

BY A. B. WELFORD, M.B., ETC. WOODSTOCK.

Mr. President and Gentlemen,—In my selection of this subject it has not been so much my intention to go into the history, pathology and treatment of all tumors affecting the scrotum and its contents, as to endeavor to give the history of a somewhat unusual complication affecting those structures, and its treatment. I shall not even enumerate the different diseases of those parts, as any good text book will give you much more information regarding them than I can possibly do. If in the naming of my paper "Scrotal Tumors," I have disappointed any one's expectation, I trust that I shall be able to make amends by this short paper which I am about to read. The title of my subject is, "Spontaneous Hæmatocele of the Tanica Vaginalis, complicated with Varicocele and Encysted Hydrocele of the Spermatic Cord."

On April 21st, 1887, D.B., aged 30, presented himself at my surgery for the treatment of a tumor of the scrotum. He possessed but one testicle (the left) and was anxious to have this saved if possible. The tumor had been growing gradually larger for several years, so that when I examined him it was about the size of a large cocoanut and by its weight had stretched the scrotal tissue to such an extent that the tumor hung down to within two inches of the upper margin of patella. He latterly had it gathered up in a suspensory bag which he had improvised himself. Upon a closer examination the neck of the tumor, or more correctly, the tissues surrounding the spermatic cord between the top of the tumor and the external abdominal ring, contained a mass of dilated spermatic and scrotal veins, six inches in circumference. Light could not be transmitted through the scrotal tumor; there was no history of injury, in fact he had guarded against injury with religious care, as he had never possessed but the one testicle. Its shape was pyriform, very tense, smooth, not painful, and there was no impulse on coughing. I concluded that I had to deal with a varicocele and hæmatocele of the tunic or a solid tumor. I decided to operate upon the varicocele first, as by this means I hoped to reduce the liability to return of the hæmatocele (if it turned out to be such after tapping). In the

* Read before the Ontario Med. Association, June, 1890.

treatment of the varicocele I was induced for two reasons, to use the elastic ligature; first, because I had read several articles in the *London Lancet* where this ligature had been used with such good results, and the theory of its action in gradually occluding the vessels by its own elastic contraction, commended itself to me; and, second, in several previous cases where I had operated by means of the hard rubber button, (this I believe was the suggestion of Mr. Burwell, of London,) which has two diverging canals from a common exit on the under surface, to corresponding pins on its upper surface, around which the wire is to be twisted, it had not fulfilled all the objects that had been claimed for that process, as in every case but two I got ulceration of the skin where the button pressed, notwithstanding the precaution I took to pad it well with thick spongy antiseptic felt, and in one case I was obliged to operate a second time on account of the wire breaking and being lost, by being twisted and untwisted so many times to take up the slack. Owing to the two latter disadvantages I have used this small invention of my own, which, though very crude, admirably does away with all danger of the breakage of wire, but does not give immunity from danger of ulceration of the part pressed upon. During the operation with the elastic ligature, although I had taken the precaution to have a triangular-edged cutting needle made to give ample room for the passage of the elastic, I found it impossible to draw it through when the needle was being passed between the spermatic vein and the scrotal skin. In my endeavor to form a loop around the veins, and in trying to withdraw the elastic it broke and a piece remained in, which subsequently produced a large abscess, and was afterwards found in the discharged pus; the operation was completed by means of a platinum wire and effected a good cure of the varicocele, the wire coming out on the sixth day. The instrument I now use has advantages over both the others by avoiding ulceration, danger of breaking wire, and is altogether much cleaner, less painful, and more reliable in every way. In a simple case of varicocele I have not found it necessary to confine my patient even to the house, but they may go about their work with very little inconvenience. Ten days later, on May 1st, I tapped the tumor and found it to be an hæmatocoele, drawing away fifteen fluid ounces of a reddish brown color, with some fibrinous shreds. I was

somewhat surprised to find that this did not entirely reduce the bulk of the tumor as there was still left a hard rounded lump about the size of a hen's egg. I thought that this probably might be indurated deposit of fibrin, so did not proceed further. On turning around to get the plaster, etc, to strap the scrotum, to my surprise the tumor was as large as ever; no doubt I had punctured a large vein somewhere near the inner surface and the hæmorrhage had refilled the sac. I confined my patient in bed to avoid any further danger and in seven days, May the 8th, laid open the sac, and evacuated about the same quantity of a reddish brown fluid, but containing more blood than the former tapping. The inside of the sac was almost entirely lined by layers of fibrin giving very much the appearance of an aneurismal sac. The tumor, which was not reduced by the first tapping, turned out to be an encysted hydrocele of the cord, which was also laid open, with the escape of about one ounce of clear hydrocele fluid, and was dressed in the same way as the tunica vaginalis by solution of iodoform in ether, and padded with bichloride gauze. The testicle was much larger than normal, but I believe that a good deal of its increase in size was due to deposit of fibrin upon it, as it had quite lost its external normal appearance. The wound healed nicely in about two weeks. Six months after there still remained a large amount of adventitious tissue and scrotal skin, which was cumbersome to him, so I suggested that in six months more probably it might be advisable to remove a piece of the skin and thus reduce its bulk. In June, 1889, he again called upon me and wished something done to reduce the size. I accordingly removed a large elliptical piece of skin from the anterior and under-surface of the scrotum, which has very much reduced the size and relieved the necessity for a suspensory bandage. He is now in New York, and writes that he is in good health and comfortable in every way. He is enabled to rest very comfortably on the left side. The result in this case has been very satisfactory indeed, ridding my patient not only of a very cumbersome and disfiguring trouble but no doubt has saved the integrity and function of the testicle, as it has regained its normal size and consistency.

GANGRENE CHECKED BY IMMERSING THE LIMB IN ALCOHOL.

BY I. W. ALLINGHAM, M.D., BISHOP, INGO CO. CAL.

I had a case of gangrene of the third finger which extended rapidly into the hand in spite of all I could do by following the directions of all authorities I have seen on the subject. The purplish color advanced steadily under the serous bleb, until it reached the middle of the metacarpal bone. In the palm this color was not perceptible, owing to the thickness of the skin, but it presented a peculiar tallowy color to a corresponding extent.

Believing that any further advance would entail a loss of part, if not the whole, of the hand, I felt justified in indulging in an experiment that seemed to me likely to succeed. I immersed the hand in alcohol, contained in a large pitcher suspended over the patient, as he lay in bed, elevating the hand to prevent swelling of the arm. The alcohol was kept warm by means of a coil of rubber tubing in the bottom of the pitcher, through which hot water was kept flowing.

The advance of the dreaded purple color was checked. The already gangrenous tissue assumed a hard, cooked appearance. I continued this plan of treatment for about sixty hours, when I replaced the alcohol by a boracic acid solution, kept hot by the same apparatus. This acted as a most efficient poultice, and in a short time the dead tissue was cast off, fortunately leaving enough live tissue next the bone to throw out granulations. In time the hand and finger made a perfect recovery.

CASE II.—A case of blood poisoning. Patient had skinned a cow that had died twenty-four hours before. Some sores on the hand admitted the poison and septicæmia set in. When I was called, patient had a temperature of 104°, and the glands at the elbow and in the axilla were enlarged and tender.

I immediately employed the same treatment as above, at the same time opening up the sores thoroughly, as well as some serous blebs above the sores. After a few hours, the temperature began to come down, and no other blebs formed. The disease was checked and the patient soon recovered. In both instances I administered 10 minum

of tincture of iron and one grain of quinine every hour for two days, then every three hours.

CASE III.—Occurred in the practice of a surgeon in a neighboring village, 45 miles away. This case had advanced so far that one metacarpal bone and finger had been removed, in hopes of checking the advance of the disease. Pus formed in the hand and wrist, and the hand was riddled with incisions to provide drainage. The hand and arm were immersed in alcohol as described above and made a very good recovery.

The change for the better, which took place immediately in each of these cases, makes me believe that alcohol is almost a specific in all such cases.

Selected Articles.

KOCH ON BACTERIOLOGY.

The following abstract, by the *Lancet*, of Prof. Koch's address at the 10th International Congress, will be of interest to our readers, in view of the development of his consumption cure, which is now on the *tapis*, as it brings us up to date regarding bacteriology :

His address was an admirably clear account of bacteriological research. Only fifteen years ago one regarded the micro-organisms occasionally observed in the bodies of diseased animals and persons, more as curiosities than as things essentially connected with the disease. And, considering the great ignorance of their nature which then prevailed, this could not but be so; there were investigators, for instance, who declared bacteria to be crystalloid bodies, not living organisms. With the perfecting of the magnifying instruments, the application of staining, the propagation of organisms on nutritive media, culminating soon in pure cultivation, a rapid change took place. It became possible to distinguish a number of quite definite sorts with certainty, and to ascertain that they were distinctly connected with the diseases in which they were found. It was further ascertained that one sort of bacteria was not transformed into another, and the remarks of old writers on leprosy and consumption, for instance, even justified the conclusion that, just as certain diseases, presumably caused by micro-organisms, had remained unchanged, their germs also must, on the whole, have retained their old qualities. Within certain limits, indeed, deviations of demeanor had been observed in some bacteria, but that was the case among the higher plants, too, without the varieties ceasing to belong

to the species. The main gain of this period of research was the recognition of the fact that the thing was to discover as many morphological and biological qualities of a bacterium as possible, so as to be guarded against the danger of confounding various bacteria. There was still a danger of this with certain bacteria, the typhus and diphtheria bacilli, for example, whereas it had been removed in the case of the tubercle and cholera bacilli by the very exact investigations of these organisms. In their case, too, however, the bacillus must never be determined by one mark alone. He had experienced this in his own case, having for some time taken the bacillus of chicken cholera—for the special study of which he had not had material,—for a variety of the bacillus of Asiatic cholera, till a new series of experiments had convinced him of his error. Whether the germs of chicken cholera would have an injurious effect on human beings was still a question, and a question that would not easily be answered, as one could not well make direct experiments on human beings, but must wait to see whether the bacillus of chicken cholera would not one day appear in a human cholera patient. As to the etiological connection of the noxious bacteria with infectious diseases, general opinion was at first against it, and strict proof was necessary. It was necessary to prove, in all cases, that the disease and the micro-organism always appear together, that the micro-organism in question does not appear in any other disease, and that the micro-organism, propagated outside of the body through several generations, always produces the same disease, if it gets into the body again. Now that the etiological connection had been proved in this manner in anthrax, tuberculosis and erysipelas, and the resistance of opponents broken, one might confine one's self, in further cases, to the two first lines of proof. This proof had still to be given in the case of abdominal typhus, ague, leprosy, diphtheria and Asiatic cholera, but in the case of the latter, it was already generally assumed that the cholera bacillus was the cause of cholera. As subjects of investigation for the immediate future, Koch designated the question whether the pathogenic bacteria live only in the body, or outside of it, too, and, in the latter case, only occasionally get into the body and cause disease; also the manner of getting into the body, and their demeanor there.

The next advance in bacteriology was the discovery of the poisons excreted by the bacteria, which were now regarded as the cause of death in fatal bacterial diseases, for the opinion that the white blood-corpuscles resist the bacteria was more and more losing ground. Koch then discussed the spore-formation of some bacteria, and the influences of air, warmth, moisture and chemicals on bacteria. Direct sunlight quickly killed

bacteria, the tubercle bacillus, for instance; even daylight produced the same effect, though more slowly. Cultivations of the tubercle bacillus, propagated for from five to seven days at a window, died. Moisture was necessary for the growth of bacteria; moisture, however, on the other hand, hindered their spreading. A bacterium never rose; its transmission took place only by the flying of dust, if it remained for some time capable of life in dry air. By means of improved staining methods some knowledge of the inner structure of bacteria had recently been gained; there seemed to be an inner nucleus of plasma with flagella proceeding from it. In certain infectious diseases—measles, scarlet fever and small-pox, for instance—the presence of a pathogenic bacterium had not yet been proved. In hydrophobia, influenza, whooping-cough, trachoma, yellow fever, cattle plague and pleuro-pneumonia of cattle, also, no specific bacterium had been discovered, though the infectious nature of these diseases was evident. And perhaps these diseases were caused, not by bacteria, but by organic parasites belonging to quite another group of animated beings. In the blood of malaria patients protozoa had been found, which were now suspected of causing this and other infectious diseases. Whether protozoa, the lowest representatives of the animal world, really deserved this suspicion would have to be decided by a method analogous to bacteriological pure cultivation.

But now there remained the question, what had been the practical utility of all these extremely laborious investigations? The investigator, indeed, ought not to inquire after the immediate practical utility of his work; in the present case, however, the question was not entirely devoid of justification. Nor was it quite impossible to give it a satisfactory answer. Had not bacteriological investigation alone led to effective methods of disinfection? The value of water filtration, the question of the filtering qualities of the soil, of the fitness of surface water for use as drinking-water, of the best method of constructing wells, the sterilization of milk—so important, especially for the nutrition of infants—the investigation of the air in school-rooms and in sewers, the proof of the presence of pathogenic bacteria in the soil and in the air, were all bacteriological questions, or conquests. The diagnosis of isolated cases of Asiatic cholera rendered timely preventive measures, the discovery of tubercle bacilli rendered timely therapeutic measures possible. Besides these, indeed, only Pasteur's inoculations against hydrophobia, anthrax, symptomatic anthrax and swine erysipelas remained to be mentioned, and the first of these probably did not belong to bacteriology at all, though they had grown on its soil. "But," concluded Professor Koch, "it will not always remain so. Therapeutics proper will always de-

rive benefit from bacteriology; hardly, indeed, for diseases of rapid course, in which prevention will remain the main thing, but certainly for slow diseases, such as tuberculosis. Others also, like Billroth, maintain this hope; but the mistake has frequently been committed of beginning the experiment on human subjects. I regard this as wrong, and look upon the alleged successes of various remedies, from benzoate of soda to hot air, as illusory. For years past I have been seeking means for the therapeutic treatment of consumption, but I began with the pure cultivation of the bacillus. I found a number of substances—etheral oils, tar-pigments, mercurial vapor, salts of gold and silver, especially cyanide of gold, for instance; some of which, like the last, even when very strongly diluted, prevent the growth of the bacillus, which, of course, suffices to bring the disease to a standstill. All these substances, however, have proved ineffectual when used against the bacillus in the bodies of animals. I continued my search, however, and found what I sought. Susceptible as the guinea-pig is to the tubercle bacillus, it proved non-inoculable when treated with the substances in question, and even when its disease was far advanced, it could be brought to a standstill by this means. This fact may give occasion to search for similar effective remedies in other infectious diseases also, and here lies the field for an international contest of the highest and noblest kind."

A FURTHER COMMUNICATION ON A CURE FOR TUBERCULOSIS.*

BY PROFESSOR ROBERT KOCH, M.D., OF BERLIN.

In an address delivered before the International Medical Congress I mentioned a remedy which conferred on the animals experimented upon an immunity against inoculation with the tubercle bacillus, and which arrested tuberculous disease. Investigations have now been carried out on human patients, and these form the subject of the following observations. It was originally my intention to complete the research, and especially to gain sufficient experience regarding the application of the remedy in practice, and its production on a large scale before publishing anything on the subject; but in spite of all precautions, so many accounts have reached the public, and in such an exaggerated and distorted form, that it seems imperative, in order to prevent false impressions, to give at once a review of the position of the subject at the present stage of the inquiry. It is true that this review can, under these circumstances, be only

*Translated from the original article published in the *Deutsche Medicinische Wochenschrift*, November 14, 1890.

brief, and must leave open many important questions.

The investigations have been carried on under my direction by Dr. A. Libbertz and Stabsarzt Dr. E. Pfuhl, and are still in progress. Patients were placed at my disposal by Professor Brieger, from his polyclinic; Dr. W. Levy, from his private surgical clinic; Geheimrath Drs. Fränzel and Oberstabsarzt Kohler, from the Charite Hospital; and Geheimrath v. Bergmann, from the surgical clinic of the University. I wish to express my thanks to these gentlemen.

As regards the origin and the preparation of the remedy, I am unable to make any statement, as my research is not yet concluded. I reserve this for a future communication.*

The remedy is a brownish, transparent liquid, which does not require special care to prevent decomposition. For use, this fluid must be more or less diluted, and the dilutions are liable to undergo decomposition if prepared with distilled water. As bacterial growths soon develop in them they become turbid, and are then unfit for use. To prevent this, the diluted liquid must be sterilized by heat and preserved under a cotton-wool stopper, or, more conveniently, prepared with a one half per cent. solution of phenol.

It would seem, however, that the effect is weakened both by frequent heating and by mixture with phenol solution, and I have therefore always made use of a freshly-prepared solution. Introduced into the stomach the remedy has no effect. In order to obtain a reliable effect it must be injected subcutaneously, and for this purpose we have exclusively used the small syringe suggested by me for bacteriological work. It is furnished with a small India-rubber ball and has no piston. This syringe can easily be kept aseptic by the use of absolute alcohol, and to this we attribute the fact that not a single abscess has been observed in the course of more than a thousand subcutaneous injections.

The place chosen for the injection, after several trials of other places was the skin of the back between the shoulder-blades and the lumbar region, because here the injection led to the least local reaction—generally none at all, and was almost painless. As regards the effect of the remedy on the human patient, it was clear from the beginning of the research that in one very important particular the human being reacts to the remedy differently from the animal generally used in experiments, namely, the guinea-pig. A new proof for the experimenter of the all-important law that experiment on animals is not conclusive, for the

*Doctors wishing to make investigations with the remedy at present, can obtain it from Dr. A. Libbertz, Lüneburger Strasse, 28, Berlin, N. W., who has undertaken the preparation of the remedy with my own and Dr. Pfuhl's co-operation, but I must remark that the quantity prepared at present is but small, and that larger quantities will not be obtainable for some weeks.

human patient proved extraordinarily more sensitive than the guinea-pig. As regards the effect of the remedy, a healthy guinea-pig will bear a subcutaneous injection of 2 cubic centimetres, and even more, of the liquid without being sensibly affected; but in the case of a full-grown healthy man 0.25 cubic centimetre suffices to produce an intense effect. Calculated by the body-weight, one-fifteen-thousandth part of the quantity which has no appreciable effect on the guinea-pig acts powerfully on the human being.

The symptoms arising from an injection of 0.25 cubic centimetre I have observed after an injection made in my own upper-arm. They were briefly as follows: three to four hours after the injection there came on pain in the limbs, fatigue, inclination to cough, difficulty of breathing, which speedily increased in the fifth hour, and were unusually violent. A chill followed, which lasted almost an hour. At the same time there were nausea, vomiting, and a rise of body temperature to 39.6° C.

After twelve hours all these symptoms abated, the temperature fell, and on the next day it was normal. A feeling of fatigue and pain in the limbs continued for a few days, and for exactly the same period of time the site of injection remained slightly painful and red. The smallest quantity of the remedy which will affect the healthy human being is about 0.01 cubic centimetre, equal to 1 cubic centimetre of the one-hundredth dilution. As has been proved by numerous experiments, when this dose is used reaction in most people shows itself only by slight pains in the limbs and transient fatigue. A few showed a rise of temperature to about 38° C.

Although the effect of the remedy in equal doses is very different in animals and in human beings, if calculated by body-weight, in some other respects, there is much similarity in the symptoms produced, the most important of these resemblances being the specific action of the remedy on the tuberculous process, the varieties of which I will not here describe. I will make no further reference to its effects on animals, but I will at once turn to its extraordinary action on tuberculosis in human beings. The healthy human being reacts either not at all, or scarcely at all, as we have seen when 0.01 cubic centimetre is used. The same holds good with regard to patients suffering from diseases other than tuberculosis, as repeated experiments have proved; but the case is very different when the disease is *tuberculosis*. A dose of 0.01 cubic centimetre injected subcutaneously into tuberculous patients causes a severe general reaction as well as a local one.

I gave children aged from two to six years one-tenth of this dose, that is to say, 0.001 cubic centimetre—very delicate children only 0.0005 cubic centimetre—and obtained powerful, but in no way dangerous reaction. The general reaction consists

in an attack of fever, which usually begins with rigors, and raises the temperature above 39° , often up to 40° , and even 41° C. This is accompanied by pain in the limbs, coughing, great fatigue, and often sickness and vomiting. In several cases a slight icteroid discoloration was observed, and occasionally an eruption like measles on the chest and neck. The attack usually begins four to five hours after the injection, and lasts from twelve to fifteen hours. Occasionally it begins later and then runs its course with less intensity.

The patients are very little affected by the attack, and as soon as it is over feel comparatively well, generally better than before. The local reaction can be best observed in cases in which the tuberculous affection is visible; for instance, in cases of lupus, changes take place which show the specific anti-tuberculous action of the remedy to a most surprising degree. A few hours after an injection into the skin of the back—that is, in a spot far removed from the diseased area on the face or elsewhere—the lupus begins to swell and to redden, and this it does generally before the initial rigor. During the fever the swelling and redness increase, and may finally reach a high degree, so that the lupus-tissue becomes brownish and necrotic in places where the growth was sharply defined. We sometimes found a much swollen and brownish spot surrounded by a whitish edge almost one centimetre wide, which again was surrounded by a broad band of bright red.

After the subsidence of the fever the swelling of the lupus-tissue gradually decreases and disappears in about two or three days. The lupus spots themselves are then covered by a soft deposit, which filters outward and dries in the air. The growth then changes to a crust, which falls off after two or three weeks, and which—sometimes after only one injection—leaves a clean, red cicatrix behind. Generally, however, several injections are required for the complete removal of the lupus-tissue; but of this more later on. I must mention as a point of special importance that the changes described are exactly confined to the parts of the skin affected with lupus. Even the smallest nodules and those most deeply hidden in the lupus-tissue go through the process and become visible in consequence of the swelling and change of color, whilst the tissue itself in which the lupus-changes have entirely ceased remains unchanged. The observation of a lupus-case treated by the remedy is so instructive, and is necessarily so convincing, that those who wish to make a trial of the remedy should, if possible, begin with a case of lupus.

This specific action of the remedy in these cases is striking, but is as perceptible to eye and touch as are the local reactions in cases of tuberculosis of the glands, bones, joints, etc. In these cases swelling, increased sensibility, and redness of the superficial parts are observed. The reaction

of the internal organs, especially of the lungs, is not at once apparent, unless the increased cough and expectoration of consumptive patients after the first injections be considered as pointing to a local reaction in these cases. The general reaction is dominant; nevertheless, we are justified in assuming that here, too, changes take place similar to those seen in lupus-cases. The symptoms of reaction above described occurred, without exception, in all cases in which a tuberculous process was present in the organism after the use of 0.01 cubic centimetre, and I think I am justified in saying that the remedy will, therefore, in the future, form an indispensable aid to diagnosis.

By its aid we shall be able, to diagnose doubtful cases of phthisis; for instance, cases in which it is impossible to obtain certainty as to the nature of the disease by the discovery of bacilli or elastic fibres in the sputum or by physical examination. Affections of the glands, latent tuberculosis of bone, doubtful cases of tuberculosis of the skin, and similar cases will be easily and with certainty recognized. In cases of tuberculosis of the lungs or joints which have been apparently cured, we shall be able to make sure whether the disease has really finished its course, and whether there be still some diseased spots from which it might again arise as a flame from a spark hidden by ashes.

Of greater importance, however, than its diagnostic use, is the therapeutic effect of the remedy. In the description of the changes which a subcutaneous injection of the remedy produces in portions of the skin affected by lupus, I mentioned that after the subsidence of the swelling and decrease of the redness the lupus-tissue does not return to its original condition, but that it is destroyed to a greater or less extent and disappears. Observation shows that in some parts this result is brought about by the diseased tissue becoming necrotic, even after but one sufficiently large injection, and at a later stage it is thrown off as a dead mass. In other parts a disappearance, or, as it were a necrosis of the tissue, seems to occur, and in such case the injection must be repeated to complete the cure.

In what way this process of cure occurs cannot as yet be stated with certainty, as the necessary histological investigations are not complete; but this much is certain, that there is no question of a destruction of the tubercle bacilli in the tissues, but only that the tissue inclosing the tubercle bacilli is affected by the visible remedy. Beyond this there is, as is shown by the visible swelling and redness, considerable disturbance of the circulation, and, evidently, in connection therewith, deeply-seated changes in its nutrition which cause the tissue to die more or less quickly and deeply, according to the extent of the action of the remedy. To recapitulate, the remedy does not kill the

tubercle bacilli but the tuberculous tissue, and this gives us clearly and definitely the limit that bounds the action of the remedy.

It can influence living tuberculous tissue only, and has no effect on dead tissue; as, for instance, necrotic cheesy masses, necrotic bones, etc., nor has it any effect on tissues made necrotic by the remedy itself. In such masses of dead tissue living tubercle bacilli may possibly still be present, and are either thrown off with the necrosed tissue, or may possibly enter the neighboring and still living tissue under certain circumstances of therapeutic activity. If the remedy is to be rendered as fruitful as possible this peculiarity in its mode of action must be carefully observed. At first the living tuberculous tissue must be caused to undergo necrosis, and then everything must be done to remove the dead tissue as soon as possible, as for instance, by surgical interference.

Where this is not possible, and where the organism is unassisted in throwing off the tissue slowly, the endangered living tissue must be protected from fresh incursions of the parasites by continuous applications of the remedy. The fact that the remedy makes tuberculous tissue necrotic and acts only on the living tissue, helps to explain another peculiar characteristic thereof, namely, that it can be given in rapidly increasing doses. At first sight, this phenomenon would seem to point to the establishment of tolerance, but since it is found that the dose can, in the course of about three weeks, be increased to five hundred times the original amount, tolerance can no longer be accepted as an explanation. As we know of nothing analogous to such a rapid and complete adaption to an extremely active remedy, the phenomenon must rather be explained in this way, that in the beginning of the treatment there is a good deal of tuberculous living tissue, and that consequently a small amount of the active principle suffices to cause a strong reaction, but by each injection a certain amount of the tissue capable of reacting disappears, and then larger doses are necessary to produce the same amount of reaction as before.

Within limits, a certain degree of habituation may be perceived as soon as the tuberculous patient has been treated with increasing doses, for so soon as the point is reached at which reaction is as feeble as that of a non-tuberculous patient, then it may be assumed that all tuberculous tissue is destroyed. Then the treatment will only have to be continued by slowly-increasing doses and with interruptions in order that the patient may be protected from fresh infections while bacilli are still present in the organism, and whether this conception and the inference that follows from it be correct, the future must show. They were conclusive, as far as I am concerned, in determining the mode of treatment by the remedy which in our

investigations was practised in the following manner. To begin with the simplest case—lupus.

In nearly every one of these cases I injected the full dose of 0.01 cubic centimetre from the first. I then allowed the reaction to come to an end, and then, after a week or two, again injected 0.01 cubic centimetre, continuing in the same way until the reaction became weaker and weaker, and then ceased. In two cases of facial lupus the lupus-spots were thus brought to complete cicatrization by three or four injections; the other lupus-cases improved in proportion to the duration of treatment.

All these patients had been sufferers for many years, having been previously treated unsuccessfully by various therapeutic methods. Glandular, bone, and joint tuberculosis were similarly treated, large doses at long intervals being made use of. The result was the same as in the lupus-cases—namely, a speedy cure in recent and slight cases, slow improvement in severe cases.

The circumstances were somewhat different in phthisical patients, who constituted the largest number of our patients. Patients with decided pulmonary tuberculosis are much more sensitive to the remedy than those with surgical tuberculous affections.

We were obliged to diminish the dose for the phthisical patients, and found that they almost all reacted strongly to 0.002 cubic centimetre, and even to 0.001 cubic centimetre. From this first small dose it was possible to rise more or less quickly to the amount that is well borne by other patients. Our course was generally as follows: an injection of 0.001 cubic centimetre was first given to the phthisical patient, and from this a rise of temperature followed, the same dose being repeated once a day until no reaction could be observed. We then increased the dose to 0.002 centimetre, until this was borne without reaction, and so on, increasing by 0.001, or at most 0.002 to 0.005 cubic centimetre.

This mild course seemed to be imperative in cases in which there was great debility. By this mode of treatment the patient can be brought to tolerate large doses of the remedy with scarcely a rise of temperature. But patients of greater strength were treated from the first partly with larger doses and partly with frequently-repeated doses. Here it seemed that the beneficial results were more quickly obtained. The action of the remedy in cases of phthisis generally showed itself as follows: Cough and expectoration were generally increased a little after the first injection, then grew less and less, and in the most favorable cases entirely disappeared. The expectoration also lost its purulent character and became mucous. As a rule, the number of bacilli decreased only when the expectoration began to present a mucous appearance. They then entirely disap

peared, but were again observed occasionally until expectoration completely ceased. Simultaneously the night-sweats ceased, the patients' appearance improved, and they increased in weight within from four to six weeks.

Patients under treatment for the first stage of phthisis were free from every symptom of disease and might be pronounced cured; patients with cavities not yet too highly developed, improved considerably, and were almost cured, and only in those whose lungs contained many large cavities, could no improvement be proved. Objectively, even in these cases the expectoration decreased and the subjective condition improved. These experiences lead me to suppose that phthisis in the beginning can be cured with certainty by this remedy. This statement requires limitation in so far as at present no conclusive experience can possibly be brought forward to prove whether the cure is lasting.

Relapses naturally may occur, but it can be assumed that they may be cured as easily and quickly as the first attack. On the other hand, it seems possible that, as in other infectious diseases, patients once cured may retain their immunity; but this, too, for the present, must remain an open question. In part, this may be assumed for other cases, when not too far advanced; but patients with large cavities, who suffer from complications caused, for instance, by the incursion of other pus-forming microorganisms into the cavities, or by incurable pathological changes in other organs, will probably obtain lasting benefit from the remedy in only in exceptional cases. Even such patients, however, were benefited for a time. This seems to prove that in their cases, too, the original tuberculous disease is influenced by the remedy in the same manner as in the other cases, but that we are unable to remove the necrotic masses of tissue with the secondary suppurative process.

The thought involuntarily suggests itself that relief might possibly be brought to many of these severely afflicted patients by a combination of this new therapeutic method with surgical operations (such as the operation for empyema), or with other curative methods, and here I would earnestly warn people against conventional and indiscriminate application of the remedy in all cases of tuberculosis. The treatment will probably be quite simple in cases in which the beginning of phthisis and simple surgical cases are concerned, but in all other forms of tuberculosis medical art must have full sway by careful individualization and making use of all other auxiliary methods to assist the action of the remedy.

In many cases the decided impression was created that the careful nursing bestowed on the patient had a considerable influence on the result of the treatment, and I am in favor of applying

the remedy in proper sanatoria as opposed to treatment at home and in the out-patient room. How far the methods of treatment already recognized as curative, such as mountain climate, fresh-air treatment, special diet, etc., may be profitably combined with the new treatment, cannot yet be definitely stated, but I believe that these therapeutic methods will also be highly advantageous when combined with the new treatment. In many cases, especially in the convalescent stage, as regards tuberculosis of the brain and larynx, and milary tuberculosis, we had too little material at our disposal to gain proper experience.

The most important point to be observed in the new treatment is its early application. The proper subjects for treatment are patients in the initial stage of phthisis, for in them the curative action can be most fully shown, and for this reason, too, it cannot be too seriously pointed out that practitioners must in the future be more than ever alive to the importance of diagnosing phthisis in as early a stage as possible. Up to the present time the proof of tubercle bacilli in the sputum was considered more as an interesting point of secondary importance, which, though it made diagnosis more certain, could not help the patient in any way, and which, in consequence, was often neglected.

This I have lately repeatedly had occasion to observe in numerous cases of phthisis, which had generally gone through the hands of several doctors without any examination of the sputum having been made. In the future this must be changed. A doctor who shall neglect to diagnose phthisis in its earliest stage by all methods at his command, especially by examining the sputum, will be guilty of the most serious neglect of his patient, whose life may depend upon the early application of the specific treatment. In consequence, in doubtful cases, medical practitioners must make sure of the presence or absence of tuberculosis, and then only will the new therapeutic method become a blessing to suffering humanity, when all cases of tuberculosis are treated in their earliest stage, and we no longer meet with neglected serious cases forming an inextinguishable source of fresh infections. Finally, I would remark, that I have purposely omitted statistical accounts and descriptions of individual cases, because the medical men who furnished us with patients for our investigations have themselves decided to publish the description of their cases, and I wished my account to be as objective as possible, leaving to them all that is purely personal.—*Med. News*, Nov. 15th, 1890.

The death is announced of Prof. Von Nussbaum, the eminent surgeon of Munich.

A METHOD OF APPLYING PLASTER-JACKETS WITHOUT THE SAYRE SUSPENSION APPARATUS.

The plaster-jacket marked a distinct advance in the treatment of diseases of the spinal column. Its use has not been a temporary "fad," or fashion, like so many medical or surgical discoveries.

No improvement has been made on Dr. Sayre's admirable method of making or applying the jacket. There has come a change in the idea as to the amount of degree of suspension necessary. I remember seeing Dr. Sayre, at the outset, have the subject raised entirely from the floor, suspended clear, in fact. Later it was not, and is not now, deemed necessary to do more than take most of the weight from the spinal column; the subject's feet are now allowed to rest upon the floor during the application of the jacket.

The disadvantages of the Sayre suspension method are briefly these: 1, The expense of the apparatus; 2, the danger more or less, in the use of suspension by unskilled hands; 3, the necessity for haste in the application of the plaster; 4, the necessity of taking the suspension apparatus off and moving the subject before the plaster has thoroughly set; 5, owing to the foregoing difficulties, a considerable amount of skill and experience is necessary to successfully apply a plaster-jacket after the Sayre method.

In the following will be found a substitute that will overcome the difficulties mentioned above, and bring the use of the plaster-jacket into the

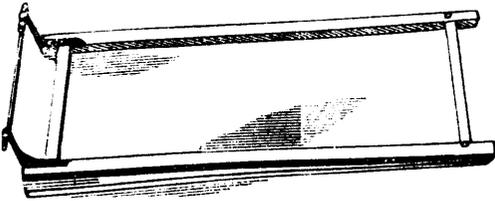


FIG. 1.

scope of thousands who have not the skill and experience needed to use the Sayre method. It should be borne in mind that it is not claimed that this method offers many advantages over the Sayre method to those who have the suspension apparatus or skill to apply it, it is intended for the practitioner more especially.

My apparatus consists of an oblong wooden frame, two and one-half feet wide by six feet in length. This is fastened together at the corners by pins, so that it can be taken apart and put away. Along the outer edge of each long side is a groove, an inch deep, which fits a wedge-strip that can be fastened with screws. On the upper end of each long piece is screwed a common cast-iron bracket-holder, with a piece of broom handle carried across from

the free end of one bracket to the other. The child grasps this cross-bar and holds itself in position. The frame being completed, a stout piece of unbleached muslin is stretched tightly over it and tacked along the outer sides of the frame below the grooves. Then the long strips are driven into the grooves and fastened. This stretches the muslin as smoothly and tightly as a drum-head, and absolutely prevents its slipping during the application of the jacket. This completes the apparatus.

In using it the end with the cross-bar on is placed on a high table or desk, and the foot upon a chair. The child is laid upon the frame, on its back, its hands carried above its head to grasp the cross-bar. An assistant may steady the grasp of the hands if necessary. The body is then straightened and stretched by gentle traction on the feet. Everything being in readiness to apply the plaster, the foot of the frame is lowered to the floor, so that the subject rests upon an inclined plane. This maintains and increases the stretching already given the child. Now, with a sharp knife make a cut in the cotton along each side of the child, close to its body, from the axilla to the middle of the hip, or as low as the plaster is to be applied. From the *middle* point of this cut make a cut in the cloth out to the frame. This at once gives a triangular opening on each side of the subject close up to the body. By making the opening triangular instead of square, the tension on the cloth supporting the head and hips is not relaxed. The child's head and shoulders rest on the stretched cloth above, its hips and legs rest on that below, and along its back is still a strip of the cotton. There is not much tension on this strip now, as it has no side supports, and hence it moulds itself to the shape of the back.

The operator stands at the right side of the frame and commences applying the wet bandages. The openings on each side allow the plaster bandages to be carried around the body, outside, the strip of cloth, along the child's back, with perfect ease, and placed exactly in position. The strip of cotton along the back is incorporated into the jacket between the shirt and the plaster. There need be no haste in applying the bandages, as the child can remain comfortably in this position for fifteen minutes. When the plaster has been properly put on and smoothed down and has begun to harden, the foot of the frame is again raised upon a chair or stool, and the jacket allowed to "set" thoroughly before moving the child. Then cut the ends of the longitudinal strip of cloth that forms part of the jacket and raise the child to its feet.

The advantages that may be claimed for this method of applying a plaster-jacket to children are: 1, It is absolutely safe in any hands; 2, it is agreeable to the patient and his friends and pre-

vents fear and screaming in nervous children; 3, there is no disturbance of the jacket while it is "setting;" 4, any country practitioner can make and use this apparatus, and without other assistance than the child's parents can get as good results as an expert can with the Sayre suspension.

A quite extensive practical experience has proven that the above claims are well founded. The comfort to myself, the patient and his friends, and the fact that the patient need not be disturbed during the "setting" of the jacket, would lead me to the use of this method for children in preference to any other.

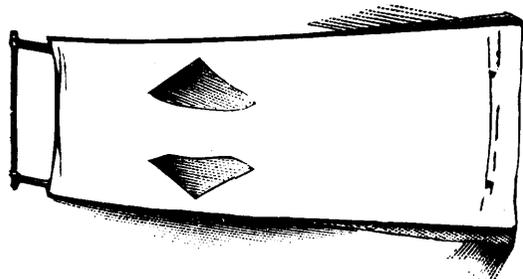


FIG. 2.

If the diseased vertebræ are in the upper portion of the spinal column, so that extension by the head is indicated, this can be brought about by attaching the head support to the cross-bar at upper end of frame.

Permit me to say that Dr. Daniel Brown of this city first suggested to me the use of a frame with a sheet stretched across. The cross-bar for the child's hands, the use of the frame in leaning position, so as to get good extension, and the practical application of it in spinal diseases should, so far as I know, be credited to myself.—Dr. E. Forest, New York, in *Med. Rec.*

ON CHOREA.

The problem of the pathology of chorea has been obscured by at least three circumstances—(1) the refusal on the part of many writers to regard reflex irritation as a possible cause of the malady; (2) the insistence upon its alleged relationship to rheumatism; (3) the assertion that endocarditis is of frequent occurrence in chorea. Not one of these can be justified. Numerous examples of chorea, due to reflex irritation, are scattered through medical literature. It has been shown both by Dr. Gowers and Dr. Sturges that in comparatively few instances is chorea found intimately associated with rheumatism. And, lastly, no evidence has yet been adduced to prove that endocarditis occurs in uncomplicated chorea. It is not surprising to find that the exciting causes

of chorea furnish a theme for the expression of the most contradictory opinions. No two authors give them alike. "The only immediate cause," says Dr. Gowers, "that can be traced with any frequency is emotion, usually fright, rarely mental distress." Dr. Broadbent, on the other hand, asserts that this influence has been much exaggerated. According to Bristowe, rheumatism, especially when "attended with pericarditis or endocarditis, must be regarded as at least one of the most efficient of the determining causes of chorea." That very few cases, if any, can be referred to this source seems almost certain from the careful investigations of Dr. Sturges; and Dr. Gowers emphatically asserts that "it is impossible to regard chorea as the result of acute rheumatism."

Pregnancy, by almost universal consent, is an occasional exciting cause of chorea. Few writers now consider it simply as a predisposing condition. But with regard to the causal influence of all other forms of peripheral irritation, the greatest difference of opinion exists. Many cases of chorea due to the presence of round worms are recorded by Davaine, Leuckhart and Cobbold also recognize the possible connection between the two conditions. Sir Thomas Watson admits that in some few instances chorea seems to depend on the presence of worms, and advises the administration of oil of turpentine in chorea "whether there be worms at the bottom of it or not." Dr. Tanner speaks of worms as well-recognised causes of chorea. According to Trousseau, on the other hand, they "stand to chorea in a very doubtful relation of cause and effect"; while Broadbent affirms that cases of chorea due to worms "must be extremely rare"; and many writers, among them Bristowe, do not refer to them at all. Rilliet and Barthez ignore a large number of recorded cases, but admit, apparently reluctantly, two cases which seemed beyond all doubt due to worms. Other forms of peripheral irritation—e.g., disorders of menstruation, dental irritation, injury to spinal nerves, head injuries, etc.—are freely admitted by older writers among the causes of chorea. Dr. Gowers, however, attributes the operation of all such solely to the emotional disturbance which is wont to accompany them. Very little, he concludes, is known of the influence of reflex irritation. To Dr. Dickinson, on the contrary, "various forms of irritation, mental and reflex, belonging especially to the nervous system," are one of the two great sources of chorea, the other, in his opinion, being the rheumatic condition. (Quoted from Bristowe, loc. cit., p. 1083.) Still less surprising is it to find corresponding contradictions in the various theories which have been propounded. It is needless to refer to them here. Suffice it to say that each is based upon some one element of chorea to the exclusion of others of equal, perhaps greater, moment; and that consequently none satisfies all

the conditions of the problem of the pathology of chorea.

Before attempting to suggest a new way of viewing chorea, whereby the various symptoms may be correlated and brought into close connection with each other, I would institute a comparison between chorea and another functional disease of the nervous system—viz., migraine. It would seem at first sight that no two diseases could differ more from one another than chorea and migraine, yet on closer examination it will be found that in many points they present strong analogies. The well-marked influence of age on the development of chorea is hardly less striking in migraine, while that of sex is only less so. Hereditary predisposition is potent in both; and the relation, whatever be its nature, of chorea to rheumatism is exemplified in that of migraine to gout. Both diseases are paroxysmal in character, the one "exploding" in pain, the other in motor disturbance, and the symptoms in each case are mainly unilateral. Gastric derangements are common to both, and may be exciting causes. Sensory disturbance, frequent in migraine, occasionally occur in chorea; while motor disturbances, the leading feature of the latter, are occasionally found in migraine, and in both cases display a strong predilection for the more highly developed muscles. Finally, both diseases are prone to recur.

Two principal theories have been propounded to account for the phenomena of migraine. The one regards it as due to a disorder of the cerebral cells leading to secondary interference with the cerebral circulation; the other as due to a primary derangement of the vaso-motor centre. The latter, notwithstanding the arguments which have been brought against it, seems the more probable. I would suggest that a similar explanation may be given of chorea. That the primary change effects the vaso-motor centre, or centres, and that the muscular movements are due to secondary vascular disturbance, interfering with the nutrition of the cortical cells—recent physiology points to the cortex cerebri, not to the corpus striatum as affected in chorea,—thereby rendering them liable to take an abnormal and, as it were, independent action (a predisposition in this direction being assumed); and that, on this hypothesis, all the other symptoms of chorea admit of harmonious explanation is, I think, rendered probable by the following consideration:—

1. As regards the *cardiac phenomena* of chorea. Irregularity and acceleration of the heart's action are better explained on the assumption of deranged innervation than by referring them to some morbid cardiac condition, of which there is no evidence. That a cardiac murmur can be referred to the same source has been denied, although its occurrence in such a disease as exophthalmic goitre can hardly be explained on any other hypothesis.

Assuming, however, that cardiac innervation is in some way disturbed in chorea—and early irregularity at least points in that direction,—there is another element present, hitherto, so far as I am aware, unnoticed, which makes the occurrence of a murmur extremely likely. Chorea is a disease mainly of that period of life when the body itself is in a state of growth. In this the heart, like all other organs, shares; but unlike other organs (with the exception of the blood-vessels and the brain), the growth of the various parts of the heart does not proceed *pari passu*. The increase in weight is mainly confined to the ventricles, for the auricles lose in proportion to the ventricles up to the period of completed development of the adolescent, and it is during this very period that chorea mainly occurs; and though it occurs after adolescence, the heart is then rarely affected. That the great strain thrown upon the left ventricle by the excessive muscular movements of chorea, along with irregular arterial action in the cerebral circulation, should result in occasional regurgitation and the development of a murmur seems not improbable.

2. *The respiratory phenomena of chorea.*—Little attention has been paid to the respiratory symptoms which all admit to occur in chorea. They cannot, in every case, be referred to irregular action of the thoracic respiratory muscles. It is much more probable that they, too, are dependent upon deranged innervation, the diaphragm being immediately affected; and, as the respiratory centre is closely connected with that which controls the heart and blood-vessels, there is in and around the vaso-motor centre in the medulla oblongata a focus, interference with which may directly occasion the cardiac and respiratory, and indirectly, the motor and other, phenomena of chorea.

3. *Cessation of choreic movements during sleep.*—This feature is eminently characteristic of chorea, being, in fact, rarely absent. That some change affects the cerebral circulation, prior to the super-vention of sleep, is certain; that this change is closely connected with a variation in the blood-pressure is highly probable. One may well suppose that the cessation of the choreic movements is due to the same vascular change, pointing again to their dependence on some affection of the vaso-motor centre.

4. *The effects of treatment.*—It is beyond doubt that the removal of a palpable source of irritation may be followed by speedy cessation of chorea. In all such cases it is probable that the result is due to a decided lowering of the blood-pressure—i.e., to a change originating in the vaso-motor centre. Chorea has also yielded to large doses of chloral. In a well-known case which occurred in Glasgow a choreic patient took sixty grains of chloral, pro-found sleep verging on coma being induced; but

with awakening there was no return of the chorea. In another case, which also occurred in Glasgow, thirty grains procured the removal of the disease. Several instances have also been recorded where chloroform narcosis brought the affection to an end. That these drugs influence the vascular system is well known. According to Whitla, the action of chloral is directed against the vaso-motor centre, and brings about a fall in the blood-pressure. Sir Thomas Watson records a case where chorea was checked by sudden fright. That in such circumstances the vascular system is strongly affected is in the experience of everyone. The results which have been recorded by Professor M'Call Anderson and others, from the treatment of chorea, by antipyrin point, I think, in the same direction—viz., that irregular vascular action is mainly concerned in the causation of chorea, as also of migraine (against which antipyrin is so potent); the consequent phenomena in each case being determined by the greater or less predisposition of certain cerebral centres, motor, sensory, or psychical, to take on abnormal action.

5. *Post-mortem evidence.*—Dr. Dickinson's investigations go to prove the profound implication of the vascular system in fatal cases of chorea. His comparison of the disease to diabetes loses somewhat of its singularity on the above supposition.

6. *The exciting causes of chorea.*—If it be true that fright is by far the most common excitant of the disease, we have therein another argument for referring the phenomena of chorea to deranged action of the vaso-motor centre. It is highly improbable that its influence is directed against the motor cells, which some assert, as these are not likely recipients of sensory impressions. Through whatever centres such impressions are conducted, it is fair to assume that the resting point is the vaso-motor centre. And with regard to all other forms of irritation, it is just as easy to believe that they affect the same centre as that they act directly on the cells of the cortex cerebri.

Finally, as regards the relationship between chorea and rheumatism, it is to be borne in mind, (1) That there is nothing improbable in the coincidence of the two affections; (2) That rheumatism following chorea presents no difficulties when the *sui generis* nature of the former is considered; (3) That chorea, supervening on acute rheumatism (some other cause operating—*e.g.*, fright), just as it sometimes follows scarlatina or measles, or small-pox, may be explained by the unstable equilibrium of the nervous centres, including the vaso-motor centre, which is so apt to follow on febrile disease.

—T. W. Jenkins, M.A., M.D., in *Lancet*.

FISSURE OF THE ANUS AND MASTURBATION.

Dr. A. Grimm says, in the *Cincinnati Lancet Clinic*, September 13, 1890, that the comparative infrequency of fissures of the anus in childhood, and still more the exceptional instances in which these have been known to cause masturbation, prompt the report of the following interesting case.

A female child, not quite eleven months old, was brought to him with a history of masturbation of three months' standing. The child was well developed and, with the exception of a certain degree of anemia and puffiness about the face, seemed to be perfectly healthy. Before the true nature of the affection was recognized, the mother had often noticed the child while in a state of momentary abstraction suddenly stiffen and relax in her arms. Gradually the symptoms became more pronounced. A certain definite position on the arm was sought; the shoulder of the mother would be firmly grasped, and with flushed face and quickened breath a seesaw motion commenced, lasting till the acme of orgasm was reached. If on the floor, the little sufferer would steady the body with her hands, and inclining towards the right side tightly press the legs together. A jerky to-and-fro movement would now begin, the face, as before, flush, and while groaning and panting, and bathed in perspiration, the orgasm would come on, often followed by a fit of crying or quiet sleep. So entirely oblivious of her surroundings was the child, that neither the presence of strangers nor scolding nor terrorizing could interrupt the action. The attacks would occur from five to ten times a day, but never during sleep. The physician who had first been consulted ascribed the symptoms to the possible presence of pin-worms; but anthelmintics proved of no avail.

An examination of the genitalia revealed a slight swelling of the labia majora and a good deal of redness of the introitus vaginae, with increased moisture. As all symptoms referable to the rectum, such as painful defecation, bloody stools or constipation, were absent, the treatment was directed towards allaying the apparent hypersensitiveness of the vaginal tract. Bromide was ordered internally, and cocaine in solution and salve applied externally. Though the vehemence of the symptoms seemed to abate somewhat, a cure was not effected.

At this juncture Dr. Forcheimer was called in consultation. A careful examination of the genitalia was made, but the findings were pretty much the same as before decried. Passing, however, his hand over the anal region, an induration was distinctly felt, and on forcibly opening the anus several linear fissures were seen just within the sphincter. Success seemed now insured, and a

favorable prognosis given. Most authors agree that anal fissures in children are more amenable to treatment than the same affection in the adult, and the heroic measures so frequently necessary in the latter are hardly ever called for in the former. Weak solutions of nitrate of silver and light touching with the solid stick of nitrate were employed, the parts were always kept well smeared with an iodoform salve and the bowels maintained in a soluble condition. But the fissures would not heal. At last, disgusted with the ineffectual results of this method, surgical interference was advised and accepted. Dr. E. W. Walker was called in consultation and practiced division of the sphincter. An iodoform tampon was daily introduced into the rectum by means of the speculum, and in two weeks the ulcers healed and masturbation was no longer indulged in.

At this period the child was, unfortunately, taken ill with chicken-pox. Not only was the skin studded with the characteristic vesicles, but the mucous membranes of the mouth and pharynx also participated in the eruption. The disease had scarcely subsided when the child resumed the former practice of masturbation. An inspection of the anal region revealed the same, if not a worse condition than before, and with out further temporizing, Dr. Walker was again called to divide the sphincter. The fissures healed as kindly as in the first instance, and with their disappearance masturbation also ceased. In searching the literature, Dr. Grimm was unable to find a parallel case. The *American Journal of Obstetrics*, vol. ix, 1876, contains the report of a case of masturbation, by A. Jacobi, in a female child nine months old. In this instance, however, the practice became established through a state of chronic constipation.

The remarkable features in the case just presented are the age and sex of the child, the severe measures that had to be adopted for the cure of the fissures, the entire absence of rectal symptoms, and, lastly, the rekindling of the disease during or immediately after an attack of chicken-pox. As regards the latter point, Dr. Grimm is inclined to believe, rare though it may be, that an eruption similar to the one existing in the mouth also invaded the rectal mucous membrane, and in this manner reproduced the pathological condition.—*Med. and Surg. Rep.*

THE BEGINNINGS OF JOINT DISEASE IN CHILDREN.

It daily becomes more evident that in the young, joint disease finds its primary origin either in the synovial membrane or in some portion of bone which enters into the articular surface of the joint and rarely ever begins in cartilages or ligaments, which are only secondarily implicated.

The relative frequency with which the various joints are affected by disease thus beginning, as against that originating in other neighboring structures, is of much importance, and generally it may be stated that the greater the area covered by the synovial membrane, the more frequently is it the site of commencement of disease, if we except the hip-joint. The apparent exception in the case of this hip-joint may be due to its anatomical peculiarities, the extent of the surface being not really large, the ligamentous union so firm and the movement so limited, that it is efficiently protected from injury. The bones of this joint ossify from one center at a much later period than that at which joint disease is most common, and are thus less liable to disease, and the membrane becomes less liable to injury. In reviewing the various joints *seriatim*, we find that a large proportion of cases in the surgical wards are described as diseases of the metacarpal bones either at the shaft or the distal extremity, involving of course the metacarpophalangeal joint, and in this instance, at least, we may lay it down as a fact that joint disease commences invariably at the end of the bone. Disease of the metacarpal bones, like disease of the wrist, is much less common in childhood, probably on account of its greater proximity to center of circulation or to its greater immunity from injury. But coming to the ankle, we have all the elements which predispose to the advent of disease—extensive synovial membranes, large proportion of cancellous tissue, and a large amount of active growth going on in epiphyseal ends of the tibia and fibula, besides the great liability to injury of these parts in the early efforts at walking. Hence we find that disease of the tarsus is of very frequent occurrence in children, and rapidly spreads to other parts. If we include all elements of the tarsus, the liability becomes greater still, and it is easy to understand when once the synovial membrane is implicated, that the other bones with which it is in contact will also speedily be involved. The origin of Chopart's amputation is due to this fact. But disease of any of these bones may not infrequently be recognized and dealt with early with the help of antiseptics, and the involvement of other parts avoided, but when once the synovial membrane is affected, amputation is hard to avoid, and generally the sooner it is performed the less is the danger of implicating other tissue. Disease of the astragalus is of great consequence to neighboring structures, and caries of the bone can scarcely fail to involve either the ankle-joint above, or the calcaneum or scaphoid below; hence the scant success that attends partial operations. The cuboid offers a greater chance of arresting disease by means of scraping or ablation of the bone. In disease of the scaphoid, partial operation is disappointing. Syme's operation is not now performed so frequently, because of all the

Bones of the foot, the os calcis is most frequently diseased, and can be treated more readily than any of the others, and the whole of the *materies morbi* eradicated with satisfactory results. I have occasionally noticed one condition which occurs in the surroundings of this joint, and of no other, and that it is the very slight amount of impaction of the ankle, notwithstanding the very distinct clinical appearances of much more serious disease. I believe that there occurs in the loose cellular tissues about the ankle a tubercular deposits, independent of bone or synovial disease, which may, however, spread to one or both of these structures. In one case of this kind, where amputation had actually been recommended, the disease disappeared on opening the abscess under strict antiseptics and carefully applied rest, leaving only an extremely small scar, which reminded me of those tubercular nodules found on the buttocks, the thigh, and occasionally on the arm, involving a large area of inflammation, which gradually breaks down and leaves a scar so minute as almost to pass without observation.

THE GALVANIC AND FARADIC ELECTRICAL TREATMENT.

Prof. F. Raymond, of the Paris Faculty of Medicine, employs the galvanic and faradic electrical treatment in the following manner, especially in the treatment of muscular atrophy. Muscles can be treated by either the galvanic or faradic electricity. If the faradic current is employed while the muscle is in communication with the conductors, this particular muscle undergoes a series of rapid contractions; while, on the contrary, if the galvanic current is applied, only two contractions are obtained, one when the current is opened, the other when it is closed.

Hence for the stimulation of the contractility of muscular fibres, the faradic current is the one to be recommended; and the mode of applying this faradic current according to what we desire to obtain, either local faradization or a generalized one. The localized faradization has for its object to act on an individual muscle; it is either direct or indirect.

Direct faradization is to influence the muscular substance directly. For this purpose the two moist electrodes are placed on the external integument corresponding to the muscle to be electrified; the dry electrodes are only to be used when the superficial integuments are to be influenced.

Indirect faradization is used to obtain a contraction of the muscle through the intermediary of the motor nerves which supply it. One electrode is to be applied at any indifferent part, while the other, the active electrode, is to be placed in

a region where the nerve trunk which is to be influenced passes superficially. Each local Faradization must be continued for ten minutes at one seating.

Generalized faradization, on the other hand, has for its object, to act on all the peripheral nerves. The patient is placed on a chair, with his bare feet resting on a stool presenting the form of an inclined plane. This inclined plane is covered with a plate of iron or copper, which is separated from the patient's feet by a piece of moist flannel. This plate is in communication with the fixed pole of an induction electrical apparatus; the other pole terminates in a wire brush, or a wet sponge, which is to be applied to the different regions of the body, beginning at the back of the neck, applying the brush especially on the painful spots and regions corresponding to the first, second and seventh cervical vertebræ. It is then carried successively to each side of the back, on the chest, abdomen, and especially in the epigastric region (on account of the solar plexus), the upper and lower extremities, and finally, the head is faradized, using here the hand as an electrode. Each sitting ought to last about fifteen minutes, and be divided as follows: one minute for the head, four for the neck and cervical region; three for the back; three for the abdomen; and four for the extremities.

In the treatment of muscular atrophy due to a spinal lesion, anterior polyomyelitis, or progressive amyotrophy, we must act at the same time upon the central lesion and the peripheral alteration of muscles. To restore the contractility of muscular fibres faradization of the involved muscles must be recommended; while, on the contrary, to combat the spinal lesion and to act favorably on the nutrition of the anatomical elements and tissues, we must resort to galvanization of the vertebral column.

The galvanization is to be done by applying the positive pole at the back of the neck, and the negative one in the lumbar region. This is kept up for two minutes; when the poles are reversed, positive in the lumbar region and negative in the back of the neck. Two or three sittings a week are to be recommended. In acute anterior polyomyelitis, or in lesions of recent occurrence, galvanization must be kept up for from two to four minutes. In spinal lesions, of slow progression, the electrical treatment is to be kept up longer. In recent cases the treatment must last from six months to one year; in old cases two treatments of three months' duration are called for yearly.—*Cor. Med. and Surg. Rep.*

DR. CHARCOT thinks that about one person in 100,000 is susceptible to the influence of hypnotism.

A CLINICAL STUDY OF RHEUMATISM.

In the daily clinic at the University of Louisville it has fallen to my lot to prescribe for a great many rheumatic cases, and they have been especially numerous during the last two years. This paper is meant to call attention to some therapeutic points, and therefore, I will not allude to the symptoms and signs, or duration, etc., of rheumatism, but simply call attention to the effects produced by the use of different drugs. In the acute form no other drug has given such satisfaction as is generally obtained with salicylic acid.

In the sub-acute variety, salol often acts nicely; while, again, a combination of salicylate of sodium and acetate of potassium succeeds where the salol has seemed to fail. Generally, up to a month or so ago, I have used the salol in too small doses, and since larger ones have been used, the results have been better.

In chronic rheumatism, and in those migratory pains hard to classify, I have been watching the effects of the individual member of the mixture; first alone, then in pairs, and lastly, the combination which is given below.

By the assistance of Mr. Samuel Meyer, the efficient druggist of the University Dispensary, the mixture has been relieved of its most disagreeable taste, and its powers really improved. The prescription is as follows:

R.—Sodii salicylatis,	} aa 2 dr.
Potassii iodidi,	
Potassii acetatis,	
Ext. cascara sagrada, fl., . . .	} ½ oz.
Glycerini,	
Aquæ cinnamomi,	
Aquæ menthæ pip. q. s.,	ad 3 oz.

M. ft. sol. Sig.—Teaspoonful every four hours.

It has been a clinical observation with me that the majority of chronic rheumatics are likewise the subjects of chronic constipation. Giving but a moment's thought to the subject, one must see the advantage of this combination. The anti-rheumatic and general alterative powers of the three first ingredients are so well known that it would be wasted time to speak of them individually, but it has seemed by combining them we obtain more than four times the effect that we generally obtain from any one of them by itself.

Now, with reference to the chronic constipation, in glycerine and cascara we have a combination producing very pleasant, gentle, but usually sufficient laxative effects. It has been our custom to vary the amount of cascara according to the needs of the case. If the bowels should be very obstinate, increase the amount of the cascara, while if, on the other hand, they acted with little assistance, we diminished the quantity.

A short report of one case will illustrate the subject for us:

One of the class at present attending the University, consulted me some two weeks ago. He complained of chronic rheumatism, and incidentally remarked, "I have been practicing medicine for fifteen years, and in the last month, or six weeks, I have tried many things to relieve my trouble, but they all failed."

In a general way, he stated that he took salicylic acid until he used up three hundred grains—salicin and salicylate of sodium each until he had consumed a hundred grains. Becoming anxious he consulted me. He was put upon this mixture, and in forty-eight hours began to feel benefit from it, and now, at the end of two weeks, he is confident that a little longer use of it will relieve him entirely.

To those laboring with any chronic rheumatism I would urge a trial of this anti-rheumatic mixture, believing it will serve them well.—Ewing Marshall, M.D., in the *Practitioner and News*.

MEDICAL NOTES.

The following preparation is said to be excellent for *chapped hands, lips*, etc. Dissolve boric acid, one part, in glycerin, twenty-four parts. Add to this solution lanolin, five parts, free from water, and vaseline, seventy parts. The preparation may be colored and perfumed.

A very successful injection in *gonorrhœa* is said to be obtainable by adding a one per cent. solution of creasote in decoction of hamamelis, combined with boric acid. It is claimed that this mixture will destroy the gonococci in two hours.

For *ozæna*, Cozzolini (*Prov. Med. Jour.* Aug., 1890) recommends the following powder for insufflation:

R.—Salol,	3 ij.
Acid. boric.,	3 j.
Acid. salicylic.,	gr. xij.
Thymol,	gr. v.
Talc pulv.,	gr. iij.—M.

Dr. C.M. Fenn, of San Diego, California, writes as follows to the *University Medical Magazine*, August, 1890, in regard to the employment of bisulphite of soda in *tonsillitis and coryza*: I can testify to the prompt effect of bisulphite of soda in aborting many cases of tonsillitis and coryza, not only from personal experience, but also from the observation and treatment of others. At the first onset of an attack, recognized by rapid enlargement of the tonsil and difficulty of deglutition, I prescribed a saturated solution of the salt (the English preparation is to be preferred), and endeavor to saturate the patient therewith as soon

as possible. To be more exact, I would suggest tablespoonful doses of the solution every hour or two for twelve hours, after which the intervals may usually be increased to three or four hours for a similar period, or, perhaps, twenty-four hours. It is seldom necessary to continue the remedy beyond forty-eight hours. If tonics now seem to be indicated, a mixture of bark and iron, with a little chlorate of potash, will supplement the treatment very nicely.

Dr. Mackintosh (*Omaha Clinic*) suggests the following ointment as almost a specific in *eczema* :

R.—Bismuth, subnitrat., . . . ℥ iv.
 Zinci oxidi, . . . ℥ j.
 Acid. carbolic. liquid, . . . ℥ xxx.
 Vaseline, alb., . . . ℥ ij.—M.
 Fiat unguentum.

Or—
 R.—Bismuth, subnitrat., . . . ℥ iij.
 Zinci oxidi, . . . gr. xxx.
 Glycerini, . . . ℥ iss.
 Acid. carbolic. liquid, . . . ℥ xx.
 Vaseline, alb., . . . ℥ vj.—M.
 Fiat unguentum.

The latter ointment mixes into a beautiful emamel-like cream, which is cooling, and acts as a balm to the irritable skin. When constant tingling and irritation disturbed the patient's rest at night, the following lotion is said to be valuable :

R.—Bismuth, subnitrat., . . . ℥ j.
 Glycerini, . . . ℥ iv.
 Acid. carbolic. liquid, . . . ℥ iij.
 Aquæ rosæ, . . . q. s. ad ℥ j.—M.

Sig.—Shake up, and apply with a camel's-hair brush.

Dr. Thomas More Madden, F.R.C.S., Ed., read a paper before the Obstetric Section at the late meeting of the International Congress, in which he reported a plan employed by him in a very large number of cases of cystitis in the female treated in the gynæcological wards of the Mater Misericordiæ Hospital, Dublin. It consists firstly in the full dilatation of the urethral canal with the instrument exhibited, so as to paralyze the contractility of the sphincter vesicæ and canal, and thus produce a temporary incontinence of urine; and, secondly, in the direct application through the same instrument of glycerine of carbolic acid to the diseased endo-vesical mucous membrane. Any pain thus caused may be prevented by the previous topical application of a solution of cocaine. The procedure recommended seldom requires to be repeated more than once or twice at intervals of a week or ten days; and combined with the internal use of boric acid, rarely fails to effect a rapid cure in any ordinary case of cystitis in the female.—*Coll. and Clin. Rec.*

HYPODERMIC TREATMENT OF ASTHMA.

Miss E. M., 25 years old, born in Ireland, dress-maker, contracted a severe cold at the age of thirteen, by bathing her feet in a cold stream of water while menstruating for the first time. She was confined to bed for nearly six months suffering with cough, shortness of breath and amenorrhœa. Her menses gradually reappeared, but remained scant and painful. Her asthma occurred frequently and continued until she was eighteen years old, when, under the advice of her physician, she emigrated to America, where she seemed to improve for about two years. After this time, however, her health began to decline gradually, and the asthma returned with greater severity. She returned to Ireland, staying there one month without relief and again come to this country, after which I saw her for the first time and treated her with indifferent success. Last January she had a severe attack of influenza, and, after convalescing from this, her asthma was decidedly worse. On June 9, 1890, she was bedfast, with her general health much impaired, and with marked loss of weight. Her appetite and digestion were poor, and pulse rapid and weak. There is no albumin in her urine. Loud sibilant râles were heard over the whole chest. Her family history shows that her father, sister and brother and her uncle and grandfather on her father's side were sufferers with asthma.

At this time I gave her morphia sulphate $\frac{1}{2}$ of a grain, and atropia sulphate $\frac{1}{100}$ of a grain, and ten grains of antyprin, with ten drops of tincture nux vomica every four hours, with favorable results; but after giving her this treatment for four days I decided to place her on hypodermic injections of strychnine and atropine, as recommended by Dr. Thomas J. Mays, in the *Medical and Surgical Reporter*, April 12, 1890. All other treatment was discontinued, and she received $\frac{1}{10}$ of a grain of strychnine, and $\frac{1}{100}$ of a grain of atropine every other day for two weeks. On account of the profound dryness produced by the atropine, even in small doses, it was then omitted, and the strychnine in the same doses was continued alone until October 1, since which time she has been taking $\frac{1}{10}$ of a grain of strychnine and two grains of Vallette's mass three times a day.

She has been free from asthma for three months, and has gradually but steadily improved. She weighs more than she ever did, and loses no sleep or rest at night; she has a good appetite, and is able again to attend to her business, which she had been forced to relinquish. By October 24, she had gained twenty-three pounds in weight.—Dr. Higbee, in *Med. and Surg. Rep.*

NOTIFICATION OF INFECTIOUS DISEASE AND MISTAKES IN DIAGNOSIS.

The practice of notification to the health authorities of all cases of infectious disease with their immediate isolation is obviously of such great value as a prophylactic that it is becoming almost universal. In England, the optional act, which only came into force less than a year ago, has been voluntarily adopted by authorities which have jurisdiction over about 12,000,000 of people. This, with the compulsory act applied to London, and with those fifty-six towns, or localities, which had previously obtained powers of compulsory notification by special local acts, makes compulsory notification now practiced with respect to about 20,000,000 of people. In Canada, we learn that the practice is generally very fairly carried out. A few fines for neglect, in certain places, have been imposed. With the tremendous gain to the public conferred by this practice, great responsibility is thrown upon medical practitioners, especially from possible mistakes in diagnosis. Some practitioners in the United States have encountered actions for heavy damages from mistakes in this way, and there has been some serious trouble of a like kind in this country. Such mistakes are liable to occur to almost any physician, especially without the utmost skill and care. According to Dr. Russell, medical officer of Glasgow, of 1,499 consecutive cases admitted to Belvidere Hospital as suffering from infectious disease, 114, or 7.6 per cent., did not suffer from the disease which they were supposed to have when they were sent in; and of that 114, no fewer than 85, or 57 per cent. of the total cases, had no infectious disease at all, and ought not therefore to have been removed.

There are two principal remedies for the troubles to practitioners liable to arise from errors of this kind in the practice of notification. First, physicians, wherever the practice is enforced, or carried out, should insist on having provided, in connection with the isolation hospitals, observation wards for the reception of cases of doubtful diagnosis. Physicians have generally "taken kindly" to this practice of notification for the public good, and the least the public can do is to afford this protection, where possible; and it could usually be made possible. Such provision obviously provides also for the public safety, and it is little short of criminal neglect when such wards are not provided.

The other remedy we will but merely name: It is better facilities for the study, and closer study by students at the schools, and even by physicians at post-graduate schools, of clinical cases of infectious disease, in order that the greatest skill may be brought to bear on diagnosis. This is strongly urged by Dr. Russell.—*Canada Health Journal*.

THE TREATMENT OF DYSENTERY.—Mr. George Harris, M. R. C. S., L. R. C. P., London (in joint medical charge, Simla), writes: I wish to bring before the profession the treatment of acute dysentery with large doses of ipecacuanha powder which has been deprived of emetine. I have of late used this powder in many cases of dysentery, and have been much pleased with the result, and, what is more, my patients have been saved the disagreeable nausea, vomiting, and depression which have usually, in my experience, followed large doses of ipecacuanha given in the usual way, and which ill-effects, I have no doubt, were attributable to the continued emetine. Messrs. Symes & Co., of this town, have fully worked out my idea, which I have had for the past ten or twelve years, namely, that it would be a great boon to suffering humanity if it could be found that the emetic property of ipecacuanha was not necessary, or essential, to its curative power in dysentery, and that, if it could be extracted without rendering the drug inert, it would be a great gain in the treatment of dysentery.

I have no doubt that the leading manufacturing chemists in England, and other places, could readily manufacture the same powder, and supply it for experimental purposes. Hitherto, as far as I can ascertain, it has been generally assumed in therapeutic works that all the good effects of the powdered root were due to the large proportion (varying from 10 to 16 per cent.), of emetine contained in it. At present, I am not in a position either to positively affirm, or deny this assumption, but it is open to question, inasmuch as the therapeutic properties of the other ingredients have not, as far as I can ascertain, been worked out either at home or abroad, and I have found, by practical experience, that the removal of the greater portion of emetine has not taken away from the power of ipecacuanha to cure dysentery. I am in the habit of giving my powder in full doses of 20 grains twice or thrice daily, according to the severity of the cases, and, as I am not absolutely certain that all the emetine has been removed, I advise my patients to be careful about taking food, either before or after taking the powder. So far, I have found that the new powder causes little or no nausea, and that the patients are far more comfortable, and not depressed at all, and that all the dysenteric symptoms rapidly disappear, the griping pain and tenesmus lessen rapidly, the stools become less frequent (become purulent and bilious), and the blood and mucus rapidly disappear.

My cases are far too few to enable me to dogmatize, or generalize at all, but I would ask for an extended trial, and I hope that others will find it—that is, the new treatment—as successful as I have. If it be found, on further trial, that ipecacuanha powder, completely deprived of emetine, is

inert in dysentery, then it will be proper to set about and give the pure emetine in fractional doses ($\frac{1}{20}$ to $\frac{1}{10}$ grain, according to Martindale), and combined in such a way as to obviate the nauseating effect without in any way lessening the therapeutic effects. I would here suggest a trial of the gallo-tannate of emetine in irritable cases of dysentery, as, according to Watts, it is neither emetic nor poisonous. If, on the other hand, it is found by others that the curative principle of ipecacuanha powder *qua* the treatment of dysentery is not the emetine, then the unfortunate sufferers from dysentery in India, and elsewhere, will not, as in the past, have to undergo the misery of large doses of the ordinary ipecacuanha, in addition to the tortures of his disease. Those who have suffered from both will readily appreciate this.

I may add that the cephæic acid is at first removed, but subsequently re-mixed with the powder after removal of the emetine. It is well known that vin. ipecac. after a time becomes inert, and deposits a sediment; is this sediment gallo-tannate of emetine, which, as above stated, is neither emetic nor poisonous, or is it an analogous ipecacuanhate of emetine?—*Br. Med. Jour.*

CORRELATIONS OF THE SEXUAL FUNCTIONS AND MENTAL DISORDERS OF WOMEN.—Barnes (*Med. Press*) thus concludes a paper on this subject:

I may conclude this imperfect presentment of a great theme by stating what seems to be the logical sequence of the facts and arguments set forth.

The proposition I present is, indeed, self-evident. All the resources of medicine, special and general, should in every case be brought to relieve the sick. This implies that similar direct objective investigations as that which is pursued in the case of females suffering from sexual disorder not apparently complicated with nervous disorder, shall be made in the subjects of nervous disorder in whom there is reason to infer that sexual derangement exists.

In the first place, there is the immediate indication to seek for light as to the cause of the nervous disorder, with a view to relieve this complication. In the second place, even if the nervous disorder be found not to depend upon the sexual disorder, it is still the duty of the physician to do what he can to relieve the sufferer from this element of trouble. An insane woman has surely as much right to relief from disease of the ovaries and uterus as a sane woman has.

Griesinger (1867) speaks very decidedly upon this point. He says: "On the least suspicion, a local examination should be made. It is certainly of great detriment to the patients that there exists amongst the asylum physicians a truly childish delicacy in regard to vaginal examinations. In Germany, France and England, I have found the same delicacy; they seem to be afraid of exciting

the patients." This was said in 1867. I think the censure may now be considerably modified.

One rule I strongly urge. In every case of puerperal insanity examine into the condition of the pelvic organs. Imperfect involution of the uterus is in the highest degree probable. In addition to other factors the functions of the breasts are almost always suspended. Thus a most potent stimulant to involution is wanting. Then retroversion or retroflexion is very probable. Relief from these conditions cannot fail to be beneficial, and may even bring about recovery.

Thus we see that in this inquiry the physiologist and the gynæcologist meet on common ground, each enlightening the other; and both helping to build up out of the materials of their special knowledge that true science, that comprehensive medicine which holds out the best prospect for the relief of physical and mental suffering.

INTESTINAL ANTISEPSIS.—To render innocuous the pathogenic organisms of the intestines, attempts have been made with drugs administered by the mouth or rectum. By the first method only those remedies are indicated that will pass through the stomach unchanged. Calomel is an agent of this class, but while serviceable in simple fermentative conditions, it is impracticable in infection of long duration. Bouchard has used large quantities of pulverized carbon in typhoid fever; naphthalin, iodoform, and salicylate of bismuth have also been recommended. These agents possess a certain antiseptic influence on the contents of the alimentary canal, but on the intestinal wall their action is *nil*, which fact receives confirmation in the treatment of typhoid fever. The intestinal antiseptics require heroic administration, and, aside from toxicity, they are absorbed in the stomach and altered in their chemical constitution before attaining the desired site. For this reason Cantani considers their exhibition per rectum as the proper method. Repeated experimental investigations show that intestinal irrigations may pass the valve of Bauhin and reach the upper part of the small intestines. The advantages arising from rectal injections are the use of large doses, direct action, and avoidance of gastric irritation. There are also other advantages attending this method. The use of cold water reduces the temperature; whereas hot water is of benefit in cholera. Thorough lavage of the intestines is also attained and a certain quantity of bacteria and ptomanies are mechanically removed. Cantani considered carbolic acid and tinnic acid to be the best intestinal antiseptics. Corrosive sublimate exerts no antiseptic action, owing to its union with albumin. Tannic acid fulfils a double indication for rational intestinal antiseptics; it paralyzes the vegetative activity of the bacteria and renders the ptomaines innocuous. The value of

tannic acid in effecting the objects already mentioned has received abundant clinical proof in the treatment of intestinal catarrh accompanied with fermentation and true specific dysentery. If the injections of tannic acid prove too irritating, then the addition to the injection of about one litre of oil is of advantage. In typhoid fever these injections are of great value; meteorism and diarrhoea disappear, and the entire course of the disease is favorably influenced. In the incipiency of this disease, it is possible by injections of tannic acid to abort it. Cantani has also secured an abortive action in the beginning of typhoid with injections containing one gramme of the hydrochlorate of quinine, and from ten to fifty grammes of pure caruolic acid in two litres of cold water.—*Med. Rec.*

THE PROPHYLAXIS OF DIPHThERIA.—At the recent International Congress the subject of the measures to be taken in averting the spread of diphtheria was discussed in the section of hygiene. An admirable survey of the subject was given by Professor Löffler of Griefswald, whose researches upon the diphtheria bacillus are so well-known. The paper concluded with several propositions (*Berliner Klin. Wochensch.*, No. 40), which may be briefly summarized. The cause of diphtheria is held to be a bacillus, which contained in the exudation on the affected mucous membranes, is liable to be disseminated in the vicinity of the patient, together with particles of the false membrane. The infectivity of the patient may even persist for a few days after all traces of diphtheritic exudation has disappeared. The strictest isolation of cases is necessary; and children who have suffered from the disease should be kept from school for at least four weeks. The bacilli have been found to retain their vitality in dry membranes for from four to five months. It is therefore essential that all clothing, bed linen, and utensils likely to have been contaminated should be disinfected, either by boiling or by exposure to steam. The room occupied by the patient should be disinfected by washing the floors with warm sublimate solution (1 in 1000), and cleansing the walls and furniture with bread. It is uncertain how long the bacilli may exist in the moist state, but it seems probable that moisture is more favorable to their vitality than dryness. Thus, diphtheria would seem to be favored by the dampness of dwellings, and also by absence of light. These organisms can exist outside the body at a temperature of 20° C., and they develop well in milk. The sale of this commodity should therefore be carefully supervised. An important statement is that which asserts that the diseases affecting pigeons fowls, calves and pigs, which resemble diphtheria, are not caused by the bacillus of human diphtheria. These diseases in the lower animals are not

therefore, to be feared as sources of the human affection. Professor Löffler thinks that the etiological identity shown by Klein to exist between diphtheria in cats and in man requires confirmation. Although lesions of mucous membranes favor the retention of the virus, yet in disposed subjects the disease may arise apart from such lesions. It is advised that when diphtheria is prevalent a systematic use of disinfectant gargles and washes (e.g., sublimate solution, 1 in 10,000) should be enforced on all children. Lastly, it is stated that the meteorological conditions which favor the spread of the disease are still unknown.—*Lancet.*

TREATMENT OF TYPHOID FEVER.—Irvin, in the *American Practitioner and News*, contributes a paper on typhoid fever, the summary to which we quote as an example of the extreme slowness with which new ideas penetrate the professional mind. Scarcely one of his propositions is tenable, and the resort to opium for every emergency reads like one of the "Tales of a Grandfather." We quote:

1. There is no medical treatment for an uncomplicated case of typhoid fever.
 2. Diet and stimulants carefully regulated to suit the case, and good nursing, fulfil all the indications.
 3. The fever is best controlled by frequent sponge baths of tepid water and alcohol, and the internal use of stimulants and opium.
 4. Feeble heart and prostration from hemorrhage or diarrhoea are relieved by opium, stimulants, belladonna, and oxygen gas.
 5. Pneumonitis and bronchitis are not influenced by special medication. Food and stimulants, with opium to relieve cough and pain, and quinine in tonic doses may be given.
 6. Hemorrhage of the bowels requires the free internal use of opium only.
 7. Perforation of the bowels is only successfully treated by the use of opium.
 8. Peritonitis requires the use of opium in repeated doses.
 9. Tympanites is most successfully relieved by the use of opium internally three or four times daily, with turpentine applied to the abdomen.
 10. Diarrhoea is controlled by opium and the regulation of food.
 11. Insomnia yields best to the use of opium; where this drug is not well borne codeine paraldehyde or urethan may be given.
 12. Nephritis should be poulticed locally and opium given internally to relieve pain.
 13. Constipation is best relieved by mild laxatives and enemata.
- Retention of urine requires the use of the catheter only.—*Times and Reg.*

PROF. KEEN gave this table to the Jefferson Medical College class, as of use in making the differential diagnosis of the following varieties of tumors :

ENCEPHALOID.	SCIRRHUS.
1. Soft, elastic, not uniform.	1. Hard and inelastic.
2. Rapid growth, large size, adhesions early.	2. Slow growth, small size, late adhesions.
3. Pain slight and wandering ; after ulceration severe and fixed.	3. Pain early, sharp fixed and lancinating.
4. Veins enlarged.	4. Veins slightly enlarged.
5. Ulcerations deep, foul, undermined and bleeding.	5. Ulceration deep, edges hard and abrupt.
6. Glands involved early.	6. Glands involved late.
7. Occurs at any age, usually before 45th year.	7. Usually occurs after 40th year.
8. Occurs most frequently in the breast, testicle and uterus.	8. Breast, uterus, stomach
9. Death occurs in from 9 to 12 months.	9. Death in from 9, to 18, to 36 months.
10. If in breast there is no retraction of nipple.	10. There is retraction of nipple.
11. Family history is bad.	11. Family history is bad.
SARCOMA.	ADENOMA.
1. May be soft and fluctuating, or hard.	1. Soft and elastic.
2. Growth irregular, adhesions early.	2. Slow growth, no adhesions.
3. Very little pain until ulceration takes place.	3. Pain very slight and neuralgic; menstrual if tumor affects the breast.
4. Veins slightly enlarged.	4. Veins normal.
5. Ulceration sooner or later quite deep.	5. No ulceration.
6. Rarely, if at all, involved	6. Glands never involved.
7. Occurs in adult middle life, 20th to 40th year.	7. Occurs from 20th to 30th year, usually.
8. Connective tissue anywhere.	8. In breast or other glands.
9. Death occurs early or late simply a matter of time.	9. Never kills.
10. No retraction of the nipple.	10. No retraction of nipple.
11. Family history good.	11. Family history good.

—Coll. and Clin. Record.

CANCER AND SMOKING.—Since the death of President Grant, a constant smoker, cancer of the tongue and cigar smoking have been closely associated in the public mind. A "prominent American physician," whose name has not transpired, is reported to have said lately : "The only cases of cancer of the tongue that I ever saw were of persons who never smoked. The majority of them were women and, the half-dozen men who were afflicted were not confirmed smokers at all." This apocryph-

al utterance is contrary to current opinion. There are no statistics that show clearly the relative liability of smokers and non-smokers to cancer of the tongue, for there are no data showing the relative numbers of smokers and non-smokers in any country. Surgeons of experience, however, find that the disease is far more frequent in persons who have been in the habit of smoking. The disease appears to be about six times more common in males than in females. The affection known as "smokers patch" is common ; a good description will be found in Mr. Butlin's *Disease of the tongue*. It is slightly-raised oval area on the forepart of the tongue, a little to one side of the middle line, just where the end of the pipe rests or where the stream of smoke from the pipe or cigar impinges on the surface of the tongue. The patch is usually red but it may be bluish or pearly-white. It lasts for years, but tends to spread over the surface of the tongue if the irritation be continued. When diffused in this fashion, it constitutes leucoma of the tongue. Leucoma is certainly a predisposing cause of cancer. There is, however, no evidence to prove that smoking is the sole cause of leucoma, nor do the majority of cases of leucoma become cancerous. Hence if smoking predisposes to cancer, it is only in an indirect manner. The smoker should never leave a "patch" untreated and should avoid rough mouthpieces and brands of tobacco which cause irritation of the tongue.—*N. Y. Med. Jour.*

MR. HUTCHINSON'S TREATMENT OF RINGWORM.—Mr. Jonathan Hutchinson gives, in his *Archives of Surgery*, the prescription upon which he has "settled down in tolerable content" for the treatment of ringworm, after having tried a great variety of remedies without equal satisfaction. He relies chiefly on chrysopanic acid. He orders as a wash for the scalp one drachm of Wright's liquor carbonis detergens to the pint of hot water. Twice a week the scalp should be well washed with this, and all scales and crusts should be removed. The hair is cut close or shaved. The chrysophanic-acid ointment contains a drachm of chrysophanic acid, twenty grains of ammoniated mercury, a drachm of lanoline, six drachms of benzoated lard, and ten minims of liquor carbonis detergens. This ointment is to be rubbed in more or less freely, according to its effects, night and morning, or latterly every night only. The cure will be slow probably, and the secret of success consists in the patient continuance of the same remedy. To those who persevere he promises recovery ; it is only the impatient who are disappointed. He has no faith in the rapid cure of ringworm.—*N. Y. Med. Jour.*

REMEDIES FOR NEURALGIA.—Writing to the *Prov. Med. Jour.* regarding the use of new syn-

thetic remedies, Dr. T. P. Thompson states that antifebrin is infinitely a more effectual pain-reliever than antipyrin, the dose is small, and it is not very expensive. Three or four grains in a little brandy or whiskey, and then a little water added to this mixture, is the best way to give it. Repeat in four hours if necessary. Dr. Thompson has never witnessed any bad depressing effect from the employment of antifebrin. In neuralgia of the head it gives sure and speedy relief. In any given case of nerve pain where one might suspect a weak or fatty heart phenacetin is to be preferred to antifebrin, but it does not seem to act quite so surely as the latter. Phenacetin in seven or eight grain-doses every four hours is a safe and effectual remedy in all neuralgias, be they in head, back, or any other part of the body. Exalgine he has also found useful, and quite corroborates Professor Fraser's statements regarding its efficacy.—*Chemist and Druggist*.

EARLY SYMPTOMS OF GENERAL PARALYSIS OF THE INSANE.—1. Fatigue after slight exertion is often the earliest symptom noticed by the patient, and is a valuable sign if noticed in connection with other suspicious symptoms.

2. Temporary aphasia is by no means uncommon as an early sign, but it must be understood that transient attacks of aphasia without apparent cause are not always followed by general paralysis. Closely related to this sign is a change in the handwriting; some patients alter their mode of holding the pen or cease writing altogether a year or more before the disease is distinct.

3. Sudden and slight attacks of loss of power or sensation, causing a man to drop whatever he may have in his hand, are frequent.

4. Neuralgia, headache, and rheumatic pains almost invariably occur a year or more before the disease declares itself.

5. Changes of temper and character are probably the most constant of all the changes which are noticed early in the disease.

The author concludes with the advice that in a patient with a history of syphilis or of injury to the brain, do not neglect early fatigue, fainting or other fits, loss of smell, vague optic disk changes, unusual headaches, neuralgia and sciatica, and change of character—Dr. Savage, *Brit. Med. Jour.*

ANÆSTHETIC SPRAY.—Dr. B. W. Richardson states that a solution of five grains of carbolic acid in five ounces of ether used as a spray is an excellent local anæsthetic. The anæsthesia produced appears before the skin is hardened by the cold—an advantage in cutting operations. If deep incisions are required a continuance of the spray upon the tissues causes very profound anæsthesia, and dissection can be continued without pain. The anæsthesia has the additional advantage of being

more prolonged than that produced by other local anæsthetics, and there is little or no pain after reaction has taken place. The disadvantages of this spray are that in some instances the wound heals slowly and by granulation, leaving an ugly scar; and that in a very large wound there is danger of carbolic-acid poisoning. Dr. Richardson recommends use of the spray chiefly in cases of ulcerating cancer with pain and an offensive discharge.—*London Med. Rec.*

THE PREDETERMINATION OF THE SEX OF OFFSPRING.—Herr G. Herz, in a contribution to the German archives of scientific and practical veterinary surgery, on the possibility of predetermining the sex, gives an elaborate review of the numerous theories of the sexual differentiation, from which it appears that we are still entirely ignorant of the cause of such difference. He enlarges on the theory of Fiquet, which is also favored by his own experiments. Mr. Fiquet, a cattle farmer at Houston, in Texas, had observed that the sex of the young was usually that of the weaker parent. He produced for experimental purposes a marked parental difference by a certain system of keeping and feeding his cattle. If he wanted a bull calf he gave the cow plenty of particularly nourishing fodder, while the bull was given far less fodder, and that of inferior quality, and was made to serve the largest possible number of cows. If on the contrary, he wanted to produce heifers, he fed the bull well and allowed him no chance of serving other cows but those on which he wanted to experiment, and which were kept on poor fodder. Mr. Fiquet says that he was successful in thirty-two cases, and Herr Herz verified the theory by experiment of his own on goats, which gave the same results as Mr. Fiquet's experiments on cattle.—*Lancet*.

A MODIFICATION OF ROMBERG'S TEST IN THE DIAGNOSIS OF LOCOMOTOR ATAXIA.—In a recent Bordeaux thesis, summarized in the *Gazette Hebdomadaire de Médecine et de Chirurgie*, Dr. Perron describes a modification of Romberg's test by which he has been enabled to diagnose locomotor ataxia in its incipency. The patient is directed to stand on one leg and close his eyes; if he cannot keep his balance, the inference is that he is affected with a spinal lesion that will ultimately give rise to locomotor ataxia. As ordinarily employed, Romberg's test often fails in cases that are not far advanced.—*N. Y. Med. Jour.*

STANLEY'S recent Emin expedition was equipped entirely with Fairchild's digestive ferments in preference to any others, and in the recent attack of gastritis, from which Mr. Stanley suffered, he was entirely sustained upon foods previously digested with Fairchild's extractum pancreatis.

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THE ADVANCE OF THEORY IN MODERN MEDICINE.

Whether or not the clinical skill of the present generation of medical men, even the oldest of them, is greatly in advance of that of their professional fathers and grandfathers, there can be no doubt whatever as to the advance of recent years in theoretical knowledge of physiological and pathological processes. Extracts from the third edition of the *Encyclopedia Britannica*, published in 1797, may be interesting reading now, from their archaism, and may serve as fixed points from which to "triangulate" our progress within the past century. The reader may remember that individuals not a few, must yet be living, who were assisted in their entrance into this cold world by the writer of the article on *Medicine* in the volume referred to. How vastly the microscope and clinical research have improved our knowledge may be seen in the following paragraph, still tainted with the Galenian theory of "humors." "It is certain, indeed, that the blood in a state of health, has some small share of acrimony, and this acrimony from certain causes may be a little increased so as to produce various diseases of a dangerous nature. This we are assured of from the increase of motion in the heart and arteries, and the similar augmentation of the action of the secretory organs, from acrid substances taken inwardly. The same thing also appears from the unusual acrimony of the secreted fluids in such cases, by which the vessels are some-

times greatly stimulated, and sometimes even quite eroded. Very many acrid substances, however, are daily taken into the stomach, so that these must either be corrected in the *primæ viæ*, or changed by digestion before they pass into the blood; or at least by dilution with much water, or being blunted by an admixture with gluten, oil, or inflammable air, they must deposit much of their acrimony, and at last be thrown out of the body as noxious substances."

Probably the physician does not live who is not many times discouraged at the apparent failure of his contest with disease. In his hours of "blue-ness" let him ponder the almost impassible chasm between the theories then obtaining in physiology and the ætiology of disease, and a triumph such at Koch seems really to have scored at last, which, by the way, he is reported to attribute more to the microscope-makers than to himself.

In treatment, too, the physician of a century ago lacked not in boldness and decisiveness of action. A case of hydrophobia was treated as follows:—"With this view a large tub of cold water, well saturated with common salt, was prepared, into which the poor boy was plunged overhead and ears, and there held until he ceased to struggle. He was then taken out again, and the same operation repeated until he became so quiet that the doctor was under apprehensions that a total extinction of life would take place. He was then wrapped up in a blanket and put to bed, and he remained more quiet than he had formerly been; but all his former restlessness returned, his pulse sunk, and he died about two o'clock in the morning." Now read Pasteur, any pessimistic physician of to-day. The article on *Nymphomania* is truly quaint. After a list of remedies somewhat alarming in their heroism—blood-letting, cooling purges, camphor in 20 grain doses or more, opiates as in mania, intra-uterine injections of barley-water, "with a small quantity of hemlock juice," the author naively adds: "This is called *specific*," but matrimony if possible should be preferred. The cure for *Tænia Solium* would certainly induce the obnoxious cestode to change his quarters with expedition. After very stringent fasting, and the drinking of sundry broths and infusions, the patient is to take two or three drachms of powdered root of male fern, and if vomiting occurs, another; then, two hours after,

a bolus of "panacea of mercury 14 times sublimed, and select resin of scammony, each ten grains; of fresh and good gamboge six or seven grains in a conserve. To be taken twice, and washed down with one or two dishes of weak green tea, after which the patient must walk about his chamber."

The article entitled *Menses* could have justice done to it only by a paper on the bibliography of the whole subject from D Graaf and Boerhave down to Galabin, Playfair, and the late lamented Duncan.

Hypotheses of all kinds are suggested, some refused, others left *sub judice*; the influence of the moon, the supposed offending quality of the blood, the flux being regarded as an excretion, the need of extra blood supply in women for the exigencies of gestation, so that menstruation was the result of a plethora, "women having this plethora, and not men, because their bodies are more humid, and their vessels, especially the extremity of them, more tender, and their manner of living more inactive than of men; and that these things concurring are the occasion that women do not perspire sufficiently to carry off the superfluous alimentary parts till they be accumulated in such quantity as to distend the vessels and force their way through the capillary arteries of the uterus. It is supposed to happen to women more than to the females of other species, because of the erect posture of the former, and the vagina and other canals being perpendicular to the horizon, so that the pressure of the blood is directed towards their orifices; whereas in brutes they are parallel to the horizon and the pressure is wholly on the side of those vessels."

The chief opponents of the theory of plethora, maintained the theory of a special ferment, the famous De Graaf being one of the latter school. Some of them went so far as to say that the bile was the ferment in question, and explained the absence of the phenomena of menstruation in men on the ground that "the pores of the latter are more open and carry off more of the serous part of the blood, which is the vehicle of all the other humors." Their non-appearance in brutes is because of "the pores of these being manifestly more open than those of women, as appears from the quantity of hair which they bear, for the vegetation whereof a larger cavity, and a wider aper-

ture of the glands is necessary than where no such thing is produced."

The histology of the above would surely pluck any freshman guilty of it now-a-days.

THE REPARATIVE PROCESS IN THE HEALING OF WOUNDS.

(Continued from Nov. Number.)

The epidermis also proliferates at the *rete malpighii*, and joins across the line of incision with a similar proliferation from the other side; microscopic section of the wound shows no clot, no fibrin (which glues surfaces together for the first twelve hours, or so, but is soon absorbed), but only a layer of fibro-blasts so delicate that frequently the microscope soon fails to detect any scar tissue at all. The old theory, that this rapid and complete union was due to microscopically accurate coaptation of parts, so that the severed capillaries returned, lumen to lumen, as before, and, as it were, fused together again, is, of course, quite untenable. The view that the connective tissue of the scar is of connective tissue origin, that is, that fibro-blasts are never formed from leucocytes, is fully in accord with the law of the specific nature of tissues, that no cells of any one of the three blastodermic layers can produce a tissue peculiar in origin to either of the other two. The process "essentially consists in a growing together of the two edges by the production of the requisite materials from the old tissues of the part." It is thus a reversion to the old embryonic type of tissue and method of growth—large, soft, round, nucleated masses of protoplasm in a state of rapid proliferation, which, being of connective tissue origin, cannot, according to the law of the specific nature of tissues, and our present theories of "embryological predestination," produce any but fibrous connective tissue; so that, in a scar, special tissue cannot be reproduced, but only cicatricial tissue formed.

1. *Healing by the First Intention*—Surfaces not so well coapted, but no suppuration, or putrefaction. A little lymph, or blood-clot, between them, which must be penetrated by the growing fibro-blasts, leaving cicatrix thicker than before, but still linear in section. Vessels are not needed, as in granulation tissue, and so, are not larger, or more numerous than normal, as in this form of union there is vascularity enough for nutrition of

fibro-blasts. The exuded lymph and fibrin form a temporary means of union, but, in forty-eight hours, or so, they soften and liquefy; the corpuscles grow fatty and granular, and disintegrate, and the whole is absorbed by the lymphatics of the part. Keeping sight of the real process of healing, which is set up in forty-eight hours, or so, we see two preliminary stages: (a) Lymph and plasma exuded, perhaps in quantity sufficient to soak bandages, giving surfaces a glossy, sticky look; (b) In 24-36 hours, surface has a dull, grayish film covering it, consisting of lymph-corpuscles imbedded in a granular nidus of precipitated fibrin and albumin. Then (c), in forty-eight hours, or so, the real process of healing is set up. The connective tissue surrounding the fatty, or sarcoous elements in the wound is found to be soft, swollen and homogeneous, while the nuclei are actively dividing and giving origin to fibro-blasts, which a little later are found wandering in the adjacent healthy tissues, and into the blood and lymph, clot of the wound, along with the leucocytes which have escaped by diapedesis. The exuded matter in the wound is a foreign body, does not organize, and must be got rid of before true organization and permanent union can go on. "The union of the wound, therefore, in healing of the first intention, is brought about by the reproduction of new connective tissue and epithelium from the old tissues of the like kind."

2. *Healing by Granulation*—In this variety, the cause of the delay in healing as compared with either of the preceding, is the presence of a still larger mass of tissue which must be removed before the healing agents, the fibro-blasts, can fix themselves in place and proceed to maturity. Hamilton teaches that the granulation is not nature's best method of healing, but a necessary evil, delaying healing and causing great waste of albumin and leucocytes, as well as the death and casting off of far more new tissue cells in the pus than would otherwise be necessary. He holds that the granulating tuft since it contains no fibro-blasts, contains no organizable matter and must be wholly removed before healing can begin. This is a necessary corollary from his view that the capillary tuft in granulation tissue is a morbid dilatation of pre-existing vessels from lack of natural support by the injured tissues. Healthy granulations approach most nearly to the natural

undilated state of the capillaries and are therefore small. Even an open wound may be made to heal without granulations and therefore much more rapidly by pressure and strict antisepsis; the pressure preventing the bulging of the capillary loops by resisting the heart's expulsive action.

3. *In healing by union of two granulating surfaces* as seen in union of flaps in amputation, the coapting of the flaps causes pressure sufficient to limit the growth of granulations, so that from pressure of the growing layer of fibro-blasts underneath they atrophy and allow the fibro-blastic layer on each side to come into contact. These layers soon cohere by the interlacing of their spindling fibro-blasts, just as healing by the first intention.

4. *In Healing by Scabbing*—The only departure from type, is that the scab, consisting of desiccated exudation, fat, blood, and epithelial cells, forms a natural shield, preventing access of external irritants such as micro-organisms, and therefore suppuration; preventing also by its pressure the formation of granulations, so that the epidermis is free to extend laterally beneath the scab more rapidly than if granulations had been allowed to form.

LIGHT IN THE SICK ROOM.

Most of us can remember the days when it was the almost universal custom to shut patients up in dark, close, stuffy rooms, irrespective of the disease from which they were suffering. I call to mind the funereal aspect of sick rooms I visited as a child, and the impression produced was not an agreeable one. There are, of course, some maladies, in which the admission of light is prejudicial to the patient, but even oculists are now taking their patients out of the dark chamber at the earliest possible moment, fully appreciating the benefit upon the system generally, and, therefore, upon their special territory of the sun-light. Of the Weir-Mitchell treatment nothing need be said. It is a special form of treatment for special purposes, and when intelligently carried out, is undoubtedly potent for good. But it is just possible that many of us practising physicians are not careful enough about the arrangement of the sick-room. In the houses of our more wealthy patients the *trained nurse*, that inestimable boon to the

medical attendant, will look after the ventilation, tidiness, light, etc., of the chamber. But with our poorer patients do we not sometimes neglect to duly impress upon the friends and attendants the importance of plenty of light; of the removal of soiled clothing, etc.? Old prejudices die hard, and there is no doubt that many an old-time nurse shuts her patient up and starves her by withholding light and air, in spite of the doctor's directions, and much to the patient's disadvantage. How often do we, on entering the patient's chamber, have to make the request, "pull up the blinds," or "open the shutters," before we can even get a sight of our charge; and when the light is admitted, how often do we find a condition of things that could hardly be tolerated if the light was freely admitted all the day long—Dust, soiled clothing, dirty dishes, half-eaten portions of food, untidy bed, dirty medicine glasses, *et al ad infinitum*; and all of which had been concealed by the friendly (!) darkness. In a word, the patient's environment is entirely unsanitary. Not only is this true, but sunlight—a powerful restorative, is denied the patient. It need not be said that the patient "cannot bear the light." The bed can be so arranged that the direct rays of light need not fall upon the patient's face, though even that would be in all cases less an evil than enshrouding him in darkness, and, in the great majority of cases, positively beneficial. Light in the room will have a tendency to make the dirt flee beneath the hands of the attendant. Sunlight diffused through rooms clarifies and warms the air. It has a cheering and beneficial effect upon the sick, and an influence upon the minute organic poisons; "the best disinfectant we have," which is altogether in favor of the patient.

It is not necessary to refer to the difference in appearance, health, vigor and tone between the inhabitants of crowded cities and those of country districts, to the town-made child and the country one, to the cellar-bred children, with their rickets, struma, physical and moral deformities. All this we have known from our youth up. Why then should we deny the sick the benefits of the life-giving sun? The blue-glass treatment, craze though it was, undoubtedly did some people good, simply by their exposure to the sun's rays. In theory we accept the doctrine of revivifying powers of sunlight, but do we always in practice act up to it, and

insist upon its free admission to the chambers of our patients? Dr. Richardson was undoubtedly right when he said that the first words of the physician or surgeon on entering the dark sick-room should be the dying words of Goethe, "More light, more light!"

RECENT GRADUATES.

At the recent examination held by the Ontario Medical Council, the following gentlemen passed the final:

Jos. Bedard, Kingston; T. C. Baker, Merrickville; E. F. Boure, Toronto; J. C. Bell, Strathroy; A. C. Beatty, Elizabethville; A. S. Bueglass, Bright; J. W. Cunningham, Hespeler; C. W. Clendenan, Toronto; D. A. Coon, Elgin; W. D. F. Ferguson, Rocklands; F. Guest, London; E. P. Gordon, Rosedale; W. E. Zimby, Goodwood; J. J. Gee, Fisherville; A. J. Harrington, Toronto; J. F. Hanley, Waubausheene; Emily J. Irvine, Brampton; E. F. Irwin, Newmarket; C. P. Jeuto, Brockville; Geo. L. Liddell, Cornwall; R. H. Mason, Barrie; R. McGee, Collingwood; C. J. Patterson, Ottawa; R. W. Rooney, Shelburne; J. A. R. Robinson, Brampton; A. H. Speers, Merton, Ont.; F. H. Sherk, Berlin; A. M. Spence, Harriston; J. L. Smith, Monck; G. H. Webster, Preston; H. Welch, Cook's Mills.

The following candidates passed the primary examination:

F. K. Armstrong, Glanford; Robt. Archer, Burketon; J. G. Burrows, Napanee; E. F. Boure, Toronto; Jas. Bedard, St. Eugene; Annie E. Carveth, Leskard; G. H. Cooke, Chesley; P. J. Clune, Wooler; J. W. Edgar, Hamilton; W. D. F. Ferguson, Rocklands; Fred. Guest, London; R. J. Gardiner, Kingston; J. J. Harper, Rosemont; A. C. Hunter, Newcastle; A. E. Henry, Mono Centre; T. A. M. Hughes, Ilderton; W. J. Johnston, Carleton Place; R. M. Mitchell, Shrigley; W. S. Morrow, Halifax, N.S.; H. J. Way, Toronto.

EXOPHTHALMIC GOITRE.—At the New York State Med. Association, Dr. E. D. Ferguson speaking of exophthalmic goitre, said (*Med. Rec.*) that until about two years ago he was unable to give little encouragement to patients with exophthalmic goitre, and he had tried all methods then recommended, including drugs, as digitalis, etc., and electricity. It was with reluctance, therefore, that in the fall of 1887 he undertook the treatment of a woman with exophthalmos, enlargement of the thyroid, and change in the pulse. Under

the treatment, which included tonics, electricity, digitalis, etc., tried several months, she grew so much worse as to be confined to bed. It then occurred to the writer that the rapid forcible, occasionally tumultuous, action of the heart would favor the idea that increase in the resistance of the systemic arteries was one of the features; and as digitalis increased tension, it was concluded that was the reason it failed to quiet the heart's action.

Strophanthus was said to lessen the arterial tension; consequently he tried this. The woman was then unable to walk, had painful sensations in the præcordia; was emaciated in an extreme degree, yet relief soon became manifest; the pulse went down, the patient became able to take a fair amount of exercise, and finally she became symptomatically cured, and the prominence of the eyes and size of the thyroid diminished.

He had since tried strophanthus on eight other cases, with marked benefit in all except one, in which there was accompanying pulmonary trouble, probably tubercular. He had no explanation except that the strophanthus relieved the overtaxed heart by overcoming resistance in the systemic circulation. He had employed the tincture in increasing doses, but care should be taken to obtain a good quality. Only recently had he seen mention of strophanthus in ophthalmic goitre in medical literature.

PAPOID IN GASTRIC CATARRH.—There are several drugs that have distinct remedial effects in this affection (*Times and Register*), especially rhubarb and ipecacuanha in minute doses, which have the property of stimulating the gastro-intestinal glands to secretion; but the stomach should first be freed from the viscid mucus that it contains by using hot water with alkalies, to be taken an hour before meals, the drug following in about fifteen minutes. If the secretion of mucus be profuse, the oxides of zinc and of silver are of value, being alterative and astringent.

But there is another agent representing another and entirely different principle, that of *coaxing* the organ back to its duty in a similar way to that in which pepsin does in dyspepsia. The agent is papoid, a powerful digestant which will begin the work of peptonizing albumin in an alkaline

medium. And, after the formation of peptone is commenced, and when the natural stimulus—food, has caused the secretion of the gastric juice, the pepsin simply continues the process until completed. It may be given in two to five grain doses, with a grain of potash or soda, and a minute amount of ipecacuanha, or rhubarb.

If the secretion of abnormal mucus in the stomach is excessive, it is well to give the hot alkaline water half an hour before meals, and the papoid immediately after meals; but, in most cases, this is unnecessary, as the papoid itself quickly rids the stomach of mucus.

ANTIMONY IN LOCAL INFLAMMATIONS.—Surgeon-Major E. Lawrie, in the *Practitioner*, relates his experience of the treatment of local inflammations by small and frequently repeated doses of antimony. He has found that, in this way, all inflammations not dependent upon a specific or septic cause, can be arrested. More particularly he instances the great benefit which antimony produces in the mucous enteritis of children; and he also found it extensively serviceable in cases of typhoid fever. He states that it cuts short the fever when all other remedies fail. No depressing effects on the heart's action was observed as long as the drug was not pushed so far as to cause nausea, and diarrhæa; and if considered desirable, it may be combined with cardiac tonics.

CAPILLARY BRONCHITIS.—A favorable formula for the administration of carb. ammonia to children, even infants, is the following:—

R—Ammoniæ carb., 32 grains.
Mucil. acaciæ 1 ounce.
Syr. simplic, 1 ounce.

M. Sig.—One teaspoonful every hour, two or three hours, according to graveness of the attack.

In the capillary bronchitis of children, which is often so alarmingly fatal, the formula in teaspoonful doses every thirty or sixty minutes, in cases where suffocation is threatened, will be found a specific.

A BOY'S ESSAY ON BREATH.—Breath is made of air, writes a Kentucky school-boy. If it wasn't for our breath we would die when we slept. Our breath keeps the life agoing through the nose when we are asleep. Boys that stay in a room all day should not breathe. They should wait till they

get out doors. Boys in a room make carbonic oxide. Carbonic oxide is poisoner than mad dogs. A heap of soldiers was in a black hole in India, and a carbonic oxide got in that black hole and killed nearly every one afore morning. Girls kill the breath with corsets that squeezes the diaphragm. Girls can't run or holler like boys because their diaphragm is squeezed too much.

The following is an excellent salve for the relief of hæmorrhoids:—

- R.—Muriate cocoaine, gr. xx.
- Morph. sulph., gr. v.
- Atropiæ sulph. gr. iv.
- Pulv. tannin, gr. xx.
- Vaseline, ʒi.
- Ol. rosæ, qs.

M. Sig.—Apply after each evacuation of bowels. Of course, contents of bowels should be kept in soluble condition.

AGARICIN.—Few practitioners appreciate says (*Technics*), the exceedingly great value of agaricin as a remedy in night-sweats, especially those of phthisis. The most profuse sweat is checked almost by magic with a single dose. It operates by diminishing thirst and increasing the secretion of the urine. The dose may be pushed to the extent of one grain in the course of twenty-four hours. The single dose for an adult is from one-eighth to one-fourth of a grain.

In three cases we have made use of Wampole's Solution of Cod Liver Oil, where neither the plain oil, nor the emulsions could be borne. In all these cases the solution was taken without difficulty, and showed itself by its effects to be a powerful nutritive tonic; building up the patient much as the oil does when it is relished. One boy has taken the solution for some months, and his mother remarked to-day, "He has never been so well as during this winter."—Extract from *Medical Times*, Feb. 15, 1889.

A. ROTHROCK, M.D., McVeytown, Pa., says: I have prescribed Aletris Cordial in a case of threatened miscarriage. The woman had had three miscarriages in five years. Some six weeks ago, she being in her fifth month of pregnancy, was attacked with hæmorrhage, bearing down pains, and all other symptoms of threatened miscarriage.

I prescribed Aletris Cordial, which subdued the hæmorrhage, bearing down pains, and all nervous symptoms that foreboded the old trouble, and at this time, she promises fair to go to full term.

HEART TONIC.—According to Dr. Delafield, of the College of Physicians and Surgeons, New York, the very best combination of remedies so far suggested for the relief of a weak heart, and dilated heart, is:

- R.—Potass. iodide, gr. v.
- Fl. ex. digitalis, ℥ ij.
- Fl. ex. convallaria majalis, ℥ xx.—M.

Sig.—For a dose repeated after each meal.

Digitalis strengthens the action of the left ventricle, and convallaria that of the right. To his suggestion we may add that when, by continued use, these remedies appear to be losing their effect, belladonna added to the prescription will, through its influence on the respiratory centre in the medulla, again lead to marked, and more or less continued improvement.

ANÆMIA AND CHLOROSIS.—Dr. Wm. Goodell is in the habit of prescribing the following mixture of the chlorides in the above diseases:

- R.—Hydrag. chlorid. corrosivi, . . gr. j-ij.
- Liq. arsenicalis chloridi, . . . f. ʒ j.
- Tr. ferri chloridi.
- Acidi mur. dil., āā f. ʒ iv.
- Syrupi simplicis, f. ʒ ij.
- Aquæ q.s., ad., f. ʒ vj.—M.

Sig.—ʒ ij. in a wineglass of water after meals.

HERPES CIRCINATA.—For tinea circinata cruris, or the so-called eczema marginatum, the best of all remedies (*Med. Mirror*), is the local application of the following, to be continued for some time, and gradually diluted as the disease disappears:

- R.—Acidi pyrogallici, ʒ j.
- Iodine, ʒ iv.
- Acidi carbolici, ʒ ij.
- Ol. amygdal. amari, gtt. v.
- Alcohol q.s., ad., f. ʒ vj.—M.

Sig.—Apply locally with camel's hair brush, daily.

PROF. KOCH'S ARTICLES.—We beg to call attention to the articles on pp. 102 and 103, in connection with the widespread interest now manifested in Prof. Koch's alleged discovery. The

daily press is deluging the people with cablegrams which it would require a *savant* to understand, and the people read and wonder. In the two articles referred to is to be found all the reliable information on the subject yet made public.

OZÆNA.—In ozæna the following is sometimes useful (*Med. Mirror*):

R.—Salol,	3 ij.
Boric acid	3 ij.
Salicylic acid,	3 ij.
Thymol,	3 ss.
Powdered talc.,	3 j.

Sig.—Use as an insufflation.

DIARRHŒA IN CHILDHOOD.—For a child one year old give :

R.—Kennedy's Ext. Pinus Can. (dark),	3 drachms.
Acid nit. mur.,	5 drops.
Syr. orange peel, q. s. ad.,	2 oz.—M.

Sig.—Teaspoonful every two or three hours.

ARISTOL OINTMENT.—The following formula is recommended by Eichhoff (*Br. Jour. of Derm.*):

R.—Aristol,	3 to 10 parts.
Vaseline,	30 parts.

The ointment is said to be not less efficacious than chrysarobin in psoriasis, and to have the advantage over the latter in that it does not stain the skin, or irritate. It is well, after applying the ointment, to cover the part with a protective, or rubber.

BRITISH DIPLOMAS.—The following Canadians have received the L. R. C. P. and S. E., and L. F. P. and S. G., examination held at Edinburgh, G. A. Ings, G. Wright, E. H. Féré, D. Archer, J. T. Rogers, and W. E. Almas.

PRURITIS.—A drachm each of camphor and chloral hydrate rubbed together, and added to an ounce of rose water, is highly recommended as a local application for pruritis in any part of the body.

Flint says : " I have never known a dyspeptic to recover vigorous health who undertook to live after a strictly regulated diet, and I have never known an instance of a healthy person living according to dietetic system who did not become a dyspeptic.

EN ROUTE FOR BERLIN.—Prof. Ramsay Wright, of Toronto University, has taken passage for Berlin, to grapple with the scientific aspect of Prof. Koch's lymph. Dr. Thorburn, jr., who had recently returned from Germany to Canada, has also gone to investigate the subject both scientifically and clinically. Dr. Winnett has also gone to swell the numbers, waiting like pilgrims round an ancient shrine, at the feet of Koch.

THE Civil, Military and Naval Departments of the British Government are supplied with the Fairchild digestive products, and the Fairchild preparations for the pre-digestion of milk, etc., are especially preferred in India.

AT a recent meeting of a Scottish doctors' club, a philosophical member propounded the question : " When may a man be said to be within himself ? " The answer that found acceptance was : " When he is confined in his bowels."

A CASE of leprosy has been discovered (*Med. and Surg. Rep.*) at Chester, Pa., by Dr. Frank Evans, the diagnosis being confirmed by Drs. Daland, Pepper and Duhring, of Philadelphia. The patient has been isolated.

The medical practitioners of London have lately organized a medical society. Dr. Moorehouse, president ; Dr. Drake, treasurer ; and Dr. Campbell, secretary. Drs. Waugh, Wilson, and Meek form a committee on by-laws.

Books and Pamphlets.

THE ESSENTIALS OF MEDICAL CHEMISTRY AND URINALYSIS. By S. E. Woody, A.M., M.D., Professor of Chemistry and Public Hygiene, and Clinical Lecturer on Diseases of Children, in the Kentucky School of Medicine. Third Edition. Philadelphia : P. Blakiston, Son & Co., 1890.

A cursory glance shows this very convenient little work to have much to recommend it, especially as a manual for laboratory work. It contains nothing but the essentials, and is distinctly meant for the medical student. The author almost dips into the Socratic system of dialectics in the manner in which he strings together the source, preparations, pharmacology, toxicology with symptoms and treatment in case of poisoning, and tests,

for each of the important metals. The tables of tests for both metallic and acid radicles of compounds in aqueous solution are singularly compendious. Organic Chemistry has devoted to it only a few pages, and the third part of the work, on Urinalysis, is a really excellent summary of the subject, shorn of all "padding." The illustrations are excellent, both of apparatus and microscopic specimens. The author makes a curious apology for his little work, in his preface, in which he practically acknowledges the evil, which he regards as for the present at least irremediable, of substituting for more exhaustive text-books, books of the quiz-compend style, which favor cram and put a handicap upon intelligent study.

SAUNDERS' QUESTION COMPENDS, No. 15. ESSENTIALS OF THE DISEASES OF CHILDREN. By Wm. M. Powell, M.D., Physician to the Clinic for the Diseases of Children in the Hospital of the University of Pennsylvania, etc., etc. Philadelphia: W. B. Saunders, 1890.

Assuming for the moment that the quiz-compend is a desirable thing, the text-book just named has perhaps more to recommend it than most of its class. It seems to be thoroughly abreast of the times, in pathology and treatment especially, and though the subjects of diet, hygiene, nursing and kindred matters, are kept largely in the background, the text-book is very systematic and concise, in its discussion of the important diseases of childhood. The subject is alike important and neglected by medical students, and if the brevity and conciseness of the 200 pages should induce more study of the subject by undergraduates the author will have done the public a service. The typography is good, and the literary style of the book fair.

A TEXT-BOOK OF COMPARATIVE PHYSIOLOGY, for Students and Practitioners of Comparative (Veterinary) Medicine. By Wesley Mills, M. A., M.D., D.V.S. With 476 Illustrations. New York: D. Appleton & Co., 1890. Cloth, pp. 636.

This is an excellent work, and one which has been long needed. There has been, until within the last year, no work in English of the character of the present, and the veterinary student has been compelled to study the subject through the medium of works on human physiology alone. The work is very complete and we may say that

rarely have we met with a scientific writer who possesses in so large a degree the power of making himself perfectly understood and that in the most pleasing manner. The work should become a classic and we believe it will. The cuts are excellent and numerous; the book will be found of value by all who desire a concise manual of comparative physiology. Veterinary students and practitioners can not afford to be without it, and we are sure the work will be of more than passing interest to the medical man generally.

THE PHYSICIAN'S VISITING LIST FOR 1891. Philadelphia: P. Blakiston, Son & Co. Toronto: Carveth & Co.

This old favorite is again before the profession. Among other useful contents may be mentioned a list of poisons and antidotes revised for 1890—a dose table re-written for 1890. List of new remedies for 1890. Notes on disinfectants. Examination of urine. Table for calculating the period of gestation, etc., etc. The work is a very valuable pocket diary to the physician and surgeon, in addition to being an excellent and handy means of keeping account of each day's work. The prices vary from \$1.00 for 25 patients per week to \$2.00 for 100 patients per week. There in an interleaved edition costing 25 cents extra.

THE MEDICAL NEWS VISITING LIST FOR 1891—Copyrighted and published by Messrs. Lea Brothers of Philadelphia.

This pocket-sized physician's visiting list is a well and neatly gotten up little book, bound in soft leather. It is published in four styles: weekly for 30 patients per week; monthly for 120 patients per month; perpetual for 30 patients per week for a year, and perpetual for 60 patients per week for a year. The perpetual lists are undated, the others are dated for 1891. It is one of the best arranged thumb-lettered visiting lists that we have seen. This little pocket-sized wallet besides containing all the necessaries of an ordinary visiting list has 31 pages of printed matter of value to a visiting physician, with an erasable tablet, catheter scale, etc., etc.

THE CANADA LANCET is published from the office of Messrs. Dudley & Burns, 11 Colborne St., Toronto, to whom application for rates, etc., may be made.