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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,

Prof. of Clinical Medicine and Therapeutics at the Post Graduate Medical School and Hospital. Physician to the Presbyterian Hospital. Consulting Physician to St. Luke's Hospital.

If there is any principle in medicine which is now well established, it is that pyothorax is to be considered as an abscess, and treated as all abscesses are treated when accessible, by efficient removal of the contents. In general terms it may be said that pus once ascertained to be in the pleural cavity, every hour's delay in evacuating it is prejudicial to the patient's chance of full recovery. The very few instances in which a purulent collection within the pleura has been removed by absorption, do not warrant us in taking the least account of such a possibility in any given case. Surgical interference, therefore, is imperative as soon as the diagnosis is made. This interference may be by simple aspiration, by puncture with the insertion of a drainage tube, or by free incision with or without exsection of a portion of one or more ribs. Simple aspiration has been so often successful that it should be tried, as a rule, before subjecting the patient to a more serious operation. In children, especially, it not infrequently happens that a single aspiration effects a cure. But there is no objection to repeated aspirations provided the progress of the case under such management seems to be toward recovery. The amount and character of the fluid removed at each operation, together with the general condition of the patient, will be the criterion by which we are to judge.

As soon, however, as it becomes evident that the case is not progressing favorably, resort must be had to means which will more thoroughly remove the pus. But in doing this it is evident that from every point of view it is most desirable to secure the greatest possible amount of expansion of the lung. It is important, therefore, that we consider whether this object can be promoted in any way by a choice in the operative measures employed. This involves the entire question of the mechanism of the respiration after the thorax has been opened. To understand this fully we must first examine the results of opening the chest of a previously healthy subject, as the principles involved are merely modified, not entirely changed, by the supervention of disease. Some twenty years ago, I had occasion to make extensive researches in this direction in reference to penetrating wounds of the chest, and in my present paper, I shall draw largely upon one which I published at the time, and, if I seem to include more than properly belongs to my subject, it will be because the observations have to be taken as a whole to be fairly intelligible.

When an opening is made through the chest wall, one of three conditions of the lung may result. It may collapse entirely, it may collapse partially, or it may retain its normal volume. Which of these results will follow, depends upon the size and the location of the wound.

Premising that I mean by complete collapse that condition of the lung, in which it is neither distended nor compressed by any extraneous force, but has simply the dimensions assigned to it by its own elasticity, I believe that this condition can occur only when the wound is so large as to nullify entirely the movement of that side, or on the other hand, when the wound has become entirely closed leaving the pleural cavity filled with air; and that in neither cases will it continue during both acts of respiration.

Let us suppose, for purposes of illustration, that.

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

we have an opening in the chest wall, the size of which we can increase or diminish at pleasure.

We will, then, first consider the case when the wound is large and free, so free that the air may pass through it in either direction without any obstruction. In this case, unless prevented by adhesions, or by a condition to which I shall advert hereafter, the lung contracts as completely as it would do if it were removed from the chest. But this complete contraction continues only during inspiration. With every expiratory act the lung is slightly inflated. This is owing to the fact that the glottis is not sufficiently large to allow perfectly free exit to the air from the lung on the uninjured side. A portion of this air is therefore forced through the bronchial connections into the opposite lung, which is perfectly free to expand, since the air by which it is surrounded has easy egress from the chest.

Indeed, were it not for the elasticity of the lung, the quantity of air which would enter it would be to the quantity actually exhaled as the area of its bronchus to the area of the glottis.

I have here a mechanical contrivance designed to illustrate the effect upon respiration resulting from wounds of the chest of different sizes. It consists of two bellows, placed side by side, representing the two cavities of the chest, and made to move simultaneously by means of a handle which is common to both. Connected with each bellows is a tube representing the bronchus; the two tubes merging into one which answers to the trachea. Each bellows has a rubber bag within it representing the lung and communicating with the bronchus. The movements of the bags are exposed to view by means of plates of glass set in the tops of the bellows. Each bellows is provided also with an opening designed to represent a wound of the chest-wall, and which may be partly or wholly closed by means of a slide.

On withdrawing the slide of one bellows entirely and detaching the tube by which this bellows is connected with the other, it will be seen that the movements of the handle have no effect whatever upon the bag. But upon replacing the tube you perceive that each time the handle is depressed the bag is partially inflated with air driven from the other bellows.

When the respiration is quiet and regular, the expansion of the collapsed lung with each expiration is comparatively slight; but when the expiratory movement is more forcible and at the same time the glottis is partially closed, a very large portion of the air from the sound lung may be forced into the one collapsed; and two or three such expirations, in rapid succession, may be enough to distend it completely and even to force a portion of it out through the wound, producing hernia of the lung. These points are illustrated in the following experiment:

A large dog was placed completely under the influence of chlorform and an opening three inches in length made in the ninth intercostal space on the left side. The lung immediately collapsed, but could be seen to expand slightly with each expiration, subsiding again with each inspiration. As the effect of the chloroform passed off, and consciousness began to return, there was an attempt at a vocal expression of suffering with each expiratory act. This caused a decided increase of the distention of the lung. The wound being closed with the fingers, this vocal effort resulted in a faint moan, which ceased immediately when the wound was uncovered. On introducing an instrument into the back of the neck, with intention of breaking up the medulla oblongata, loud cries were uttered and the lung immediately filled the chest and protuded from the wound.

It is to be remarked that, in this experiment, moderate efforts at phonation were ineffectual so long as the wound remained open. This was, no doubt, owing to the large amount of air which passed from the lung on the uninjured side into the other lung, not leaving enough to pass through the glottis to cause vibration of the vocal chords. But the moment the wound was closed the air imprisoned in the pleural cavity prevented the expansion of the crippled lung, compelling the entire quantity of air from the sound lung to pass out through the glottis, and phonation was the result.

The extreme pain from the introduction of the instrument caused an extraordinary vocal effort, involving a violent expulsion of the air from the sound lung and at the same time a further diminution of the opening of the glottis, both of which circumstances contributed to the expansion of the collapsed lung.

Similar observations have been recorded by various writers, whose explanations are substantially that which I have given. But they all seem to

have overlooked the fact that the converse of this action takes place in inspiration, and that, with the size of wound which we are now considering, the collapse of the lung during inspiration is not merely the passive result of the elasticity of the latter, but the active result of the exhaustion of the air from it by the expansion of its fellow, with which it is in direct communication. This can readily be seen by means of the apparatus. You will perceive that if the bag is left to itself, at the close of expiration it collapses slowly, but if the handle of the bellows is immediately raised again the collapse is instantaneous.

Thus we see that with this size of the wound the lung remains entirely unaffected by the motion of its own side of the chest, while it has a movement which results from the expansion and contraction of the opposite thoracic cavity, and which is precisely the reverse of its normal action.

We also perceive that the sound lung does not receive its entire supply of air from the external atmosphere, but that a portion of the supply is vitiated air from the other lung. The withdrawal of this amount of air necessitates the entrance of an equal amount through the wound, in addition to the quantity required by the expansion of the wounded side.

But let us now suppose the wound, instead of being sufficiently free to present no obstruction to the passage of air, to be so much reduced in size as not to allow the entrance of quite enough air to keep pace with the expansion of the chest, and the additional demand by the sound lung. The moment this degree of narrowness of the wound is attained, sufficient air will pass through the trachea into the collapsed lung to supply the deficiency. The close of inspiration, therefore, will find the lung not completely collapsed as in the former case, but slightly expanded. At the same time a new element comes into play in the expiratory act. The air contained in the pleural cavity, not finding perfectly free exit through the wound, is compressed against the lung, and offers an obstacle to the ready passage of air into it from the opposite side. The consequence is a less degree of inflation during expiration than would otherwise take place.

The gross result, therefore, of slightly narrowing the wound has been to diminish the play of the lung, the expansion during expiration being lessened, and the collapse on inspiration rendered less complete.

Hence it is evident that by progressively diminishing the wound, a point would be reached at which the lung would remain motionless, in a state of partial expansion, the various forces operating upon it (including its own elasticity) exactly neutralizing each other.

If now there were intervals of quiescence as in normal respiration, the lung would gradually collapse again by its own elasticity; but in embarrassed respiration these intervals never exist. Inspiration immediately follows expiration, and thus the effect is kept up and the lung not permitted to subside. At the same time, as seen through the wound, the lung has an appearance of moving, which results from the rising and falling of the ribs. This appearance is so deceptive, that I have introduced an instrument and touched the lung before I could be fully satisfied that it was motionless.

The area of the wound corresponding to the condition in question will be found to have a definite relation to one-half the area of the glottis. And here I may remark in parenthesis, that it is curious with what unanimity authors agree in instituting comparisons between the size of a wound in the chest-wall and the entire area of the aperture between the vocal chords, forgetting that this aperture has to supply air to the sound as well as to the disabled lung, and that therefore only half its area should be taken for comparison with a wound of one side of the chest.

(To be continued.)

ADDRESS IN MEDICINE.*

BY L. C. PREVOST, M.D., OTTAWA.

(Continued from Oct. number.)

At the same meeting Sir J. Lister showed himself to be a strong partisan of Metschnikoff's theory of phagocytosis, and, in the course of his speech, he attributed the usual harmlessness of non-antiseptic silk ligatures to the imbibition of the threads by leucocytes, which then destroy bacteria, and," he added, "how little did the late Conheim think that his discovery of diapedesis of leucocytes in inflamma-

*Read before the Canadian Med. Association, Sept., 1890.

tion would, later on, acquire such an importance in the pathology of infectious diseases."

Infectious agents can injure the organism by a mere mechanical action; they may by their abundance obstruct the capillaries of certain organs.

They possess besides a more purely vital action. To live, they want matter to consume, and living in our organism, they cannot consume but the matter destined to the nutrition of the cells of the latter. Thus, a vital competition is established between the cells of the parasite and the cells of the infected organism obliged to support new guests.

But that is not all. It has been thoroughly demonstrated, owing to recent investigations, that the pathogenic microbes secrete special toxic substances, real azoted bases, similar to the alkaloids extracted from vegetables and which, dissolved in the fluids of the organism, produce a true poisoning. Thus the microbe, the figured element, would be the factor of infection, and the soluble products which it secretes, that is, the ptomaines, and the leucomaines, the agents of poisoning.

Our organism may be considered as a receptacle and a regular laboratory of toxic matters. Even in the normal state, the digestive tube is the part of our body wherein can be found the greatest number of microbes. It incessantly receives them from without, through air, aliments and drinks. Some come from the cavities in communication with œsophagus, namely: the mouth, nasal fossæ, pharynx and lungs. They exist in small quantity in the stomach where they are killed by the chlorydric acid of the gastric juice; they are more numerous in the small intestine, but it is in the large intestine that an enormous quantity of them is to be found. These microbes feed upon what we have prepared for our own nutrition; they are our guests, our parasites, and live upon the portion of our aliments which we do not consume, clients who eat the leavings of the table. Sometimes they work for us, some of them, in fact, play a certain *rôle* in the digestive transformations of alimentary substances, but more often they openly work against us. It is they which incessantly fabricate in the digestive tube, compound ammonia, such as leucin, tyrosin, indol, phenol, scatol, and various alkaloids, which render fæcal matters toxic, a fact experimentally demonstrated, particularly by Etich and Bouchard.

Well, in spite of all these toxic matters contained in our digestive tube, we however escape poisoning, because the organism is incessantly working to be rid of them.

If, owing to phagocytosis and other means, the economy defends itself against the invasion of microbes, it is not either unarmed against the poisoning which may be the result of their toxic products. Emunctories constitute a real safety-valve, the physiological integrity of which shelters us against the accidents which otherwise would not fail to reach us. The kidneys, for instance, slowly but surely eliminate a certain quantity of these poisons. Bouchard has showed that the adult and healthy man eliminates in the twenty-four hours, for each kilogram of his weight, a quantity of urinary poison capable of killing 464 grams of living matter. It takes on an average, two days and four hours for a man to fabricate a mass of urinary poison sufficient to kill himself.

But the kidney is not the only safeguard of organism against poisoning of intestinal origin. The liver destroys half of the putrid matters coming from the portal vein. The system of defence, at last, is completed by oxydation, by the combustion which takes place in the blood and all the cells of the economy.

Thus, micro-organisms introduced into our body, provoke around them a reaction to bring back the individual to the normal state; the organism may remain victorious, cure is effected; it may be subdued, then it succumbs; but let the cause persist, let the organism strive to struggle in vain against an incessantly reviving adversary; and instead of being transient, let the cause be permanent, let the microbe persist within ourselves and the disease then will be chronic.

From the day that it was demonstrated that miasma, as well as virus, were nothing else than the germs of the air, that is, the microbes and their spores, the whole pathology became, as it were, illuminated by a resplendent light, the advantages of which can be calculated by the number of works accomplished in this direction within the last fifteen years.

Surgery was first to derive benefit from the memorable discoveries of Pasteur and his disciples on ferments and microbes. Thus, we had Guerin's and Lister's dressings. The former, in order to shelter his wounded against the germs of the air, would envelope the limb with a thick layer of

wadding maintained by a roller bandage. Results were simply marvellous: rapid and complete cure, with hardly any suppuration.

Lister, believing that the vapors of carbolic acid were incompatible with the existence of germs, which are paralysed, destroyed by this agent, would not hereafter operate unless in a mist saturated with these vapors. This conception, although recognized to-day as erroneous in its application, had nevertheless for a result the disinfection of the instruments and the hands of the operator.

It was the discovery of antiseptism which had in science such a resounding, and which confirmed the exactness and accuracy of the germ theory. We heard everywhere of nothing else but antiseptic dressings, and owing to this new method, major, as well as minor operations succeeded to everyone's wish and great surgical traumatism became a play, where formerly surgeons hardly dared use their knives even to open an abscess. It is owing to this method that surgeons have to-day lost this extreme fear they formerly had of dealing with joint diseases. A few years ago, it was an axiom in surgery that the opening of the knee-joint had for corollary the amputation of the thigh, and often the death of the patient. Complication of wounds have disappeared with antiseptic dressings; erysipelas, lymphangitis, septicemia pyohemia, all known to-day as being produced by certain microbes, shall have hereafter but an historical interest. It is again antisepsy which explains the boldness and the success of operations in abdominal surgery. Without it, surgeons would not lay such rash hands on peritoneum, liver, stomach, intestines, bladder, ovaries, and uterus. We appeal also, at last, to the memory of ancient accoucheurs to proclaim the marvels realized in obstetrics by antisepsy. Microbic doctrines are certainly not accepted without contention, but whether the germ theory is rejected or not, it is nevertheless indisputable that the immense progress accomplished within the last twenty years in the treatment of wounds, is the consequence of the doctrines actually admitted upon the origin and nature of septic complications. Even if they had no other effect than to impose upon all scrupulous cleanliness, the result is enormous. Owing, in fact to antisepsy or asepsy, we obtain rapid cure and considerable lowering of mortality, although we operate to-day a great deal more than formerly.

Medicine as well as surgery was not slow either to derive benefit from the discoveries realized in bacteriology. Microbic doctrine has had the result of introducing into the study and treatment of diseases, the notice of etiology. Not long ago, the effects of diseases constituted the most special object of our attention; to-day it is pathogeny which guides the clinician and the therapeutist. Germ theory is, amongst all others, the only one which is not compelled to resort to these vague expressions which ancient medicine was satisfied with, in order to explain contagion of diseases. All those denominations, such as miasma, virus, etc., we were using less than twenty years ago, to design that something unknown which constituted the agent of contagion could not be defined without our having recourse to a catalytic action which had no other utility than to further remove the solution of the problem and to substitute an unknown for another unknown.

Bouley's axiom that every infectious disease is a function of microbes is becoming more and more confirmed; every day brings us the discovery of a new pathogenic microbe.

We are not satisfied with discovering microbes, but we study their biology, we are learning how to modify their function and consequently their virulence.

Pasteur's merit, in fact, does not lie so much in the discovery of the living nature of contagion of diseases, as in the processes he has been making use of in the culture of their virulent principle and in the means he employed to attenuate their noxious properties.

Is it necessary, gentlemen, that I should here remind you of the brilliant results achieved by this immortal genius, with regard to the preventive treatment of anthrax in animals? The vaccine against that plague is to-day forwarded to the whole world and has already saved numerous flocks from an almost certain destruction. It has given such results that we can estimate to several millions the economy realized for the benefit of agriculture. Industry and commerce have therefrom derived such great profits, that France thought it her duty to award that illustrious man a national recompense and to place him at the highest rank amongst the benefactors of his country and of the whole world.

But far more important, are for us, the results obtained by the first application to man of Pasteur-

ian vaccination, that is, the prevention of rabies. Before Pasteur, the mortality of rabies was 40 to 47 per 100. Well, from past experience, wherever the Pasteurian method has been carried out, the mortality has fallen, on an average, to about 1.5 cent. This is an unquestionable gain and we cannot too highly emphasize these figures, when in the presence of those who gainsay Pasteur's method.

Surely, microbic doctrine is still very recent, microbiology is far from having said its last word. However, we are already able to throw some light in certain cases of doubtful diagnosis, owing to well-known microbes, easily recognizable by their form, their culture or their inoculation. How many diseases have to-day, owing to bacteriological investigations, lost the mysteries which surrounded their etiology and their nature! Do we not actually possess a better knowledge of typhoid fever, since Eberth has laid down precise notions concerning the pathogenic bacillus of that disease? We know where this microbe is located within, as well as without the organism. It is a well-known fact that it penetrates the economy, especially with the water we drink, and that it is carried away by the patient's dejections, through which contagion is propagated.

Koch, by his researches, has contributed to throw light upon the etiology of cholera, and Gamalcia has already, by his experiments on animals, succeeded in finding the vaccine against this affection.

Pneumonia, which has always been considered as the type of inflammatory diseases, "a *frigore*," has become an infectious disease, owing to the discoveries of Talamon, Frankel and Friedlander. Like all infectious diseases, it follows a regular cycle and is doomed, so to speak, to go through all its periods, which no remedial agents can cut short. Thus are explained these epidemics of pneumonia, held as so strange, and which have repeatedly been signalled in the past medical literature. Thus, again, is explained the crusade undertaken twenty years ago by Bennett, Todd, Behier and others, against those depressing means of treatment, such as bloodletting, and emetics, which had the pretension of cutting short the symptoms from the beginning.

Laveran has discovered the microbes of malaria, those merciless little beings which will not allow man to live with impunity on the soil they inhabit. Several observers, amongst whom I am proud to mention one of our most illustrious compatriots, Dr. Osler, have all practically confirmed Laveran's observations, whose important and patient researches have been very eloquently extolled by Osler, in the following terms: "Working as he did, alone in Algeria, under circumstances the reverse of favorable, without proper laboratory equipment, without the stimulus to be found in the association of men in large cities, it is not only in the highest degree creditable, but most encouraging, that an army surgeon, actively engaged in the duties pertaining to his battalion, could accomplish so thorough a piece of work, requiring but little subsequent correction and receiving at all hands ample confirmation."

Wood and Formad, two Americans, have also discovered and isolated the microbe of diphtheria. Later on, Klebs has given us more precise notions on this microbe, and quite recently, Roux and Yersin have made discoveries which will hereafter guide the study of diphtheria in a new way. These authors, in showing that it is the secreted poison which in spreading, generalizes the infection, that the microbe remains localized within the false membranes, have at once destroyed the idea we had concerning this affection. It was, as we believed, a general disease at the first onset, angina, croup being only its manifestations; actually we know that the affection is at first local, that we are able, in combating it at the beginning, to prevent infection from taking place; and, if we can find the means of destroying in good time, in the membranes, the diphtheritic agent before it is generalized, we shall have considerably diminished, I fancy, the mortality of that terrible plague.

And how grateful must we not be to the illustrious German bacteriologist, Koch, for his important discoveries concerning tuberculosis? The preventive and curative treatment of this disease has recently received a direction which, doubtless, will check the increase of this formidable affection which decimates the populations of the whole world.

At last, Bouchard's investigations have thrown a new light upon the pathology of the digestive system. In pointing out the *rôle* played, in digestion, by micro-organisms, he has given us the explanation of the strange phenomena offered by those who suffer from what is commonly called gastric

embarrassment, indigestion, biliousness, flatulence, dyspepsia. It is to the products secreted by these ferments, and to their penetration into the economy that we owe these symptoms, which are but the manifestations of a real poisoning. To prevent the latter, we have a double means at our disposal: destroy the microbes by intestinal antisepsy, and expel them from the digestive tube by purgatives. By the way, I shall here remark how much the interesting researches on putrid fermentations of the intestines, justify the traditional medication of our forefathers and the physicians ridiculed by Molière, were not altogether wrong after all, to give so much importance to the reiterated expulsion of atrabiliary humors upon which depended most of the evils that afflicted their clients.

And again, gentlemen, I could speak of the bacteria discovered by Hansen in leprosy; of that of erysipelas discovered by Cornil and Fehlensen; of Pasteur's staphylococcus in osteomyelitis; of Neisser's gonococcus in gonorrhœa, and of so many other microscopic malefactors started out of their dens by clever, patient observers. But I fear I have already long ago overreached the limits of your patience. I humbly beg pardon for the tedious task I may have imposed upon those among you who know all these things. But I conceived the idea of the present work, especially with regard to those who still hesitate to acknowledge the accuracy and importance of the doctrines I so enthusiastically support.

As far as I am concerned, I confess that I could not help being seduced by the hopes that the marvellous discoveries in bacteriology allow us to entertain for the future.

Bacteriology, in fact, has produced a revolution in the medical world. The veil which for so many centuries covered the arcanum of science, seems to be rent, owing to its oldness itself, and new horizons of inexpressible richness are laid open. A whole new world has sprung up before our eyes. We have scarcely passed its threshold, and surely there remains a great deal yet to be seen and learned. It is not sufficient to know that there exist microbes, and that they are the agents of most of our diseases; we must find the means of combating them, of destroying them, and of opposing their noxious action in the economy; since, after all, the physician's aim is to cure or relieve those who suffer. Unfortunately, if so far we have succeeded in killing micro-organisms "in vitro," it is nevertheless true that the means at our disposal cannot generally reach them in diseases without destroying in the meantime the organism which is like their bulwark. We know the foe, we know where it lies, we possess against it powerful means of destruction; but squatted in the living cell, as within an entrenchment, it sets us at defiance, and slowly distils its poison. But, in this struggle, we must and we shall, I hope, some day become victors. Our anxiety, hereafter, must be to look for the action of each antiseptic upon each microbe, to determine the agents that act most energetically upon it, and to discover amongst these agents, those that are the most harmless to the human and animal being. Empirically we have already found out the special antiseptic power of certain therapeutical agents and their elective action against a given infection. Syphilis has been cured by mercury for several centuries, and if quinine so rapidly and so easily triumphs over malaria, is it not because it possesses a noxious action upon the infectious flagellum? The so remarkable efficacy of salicylic acid in rheumatism, is according to all probability explicable by an antiseptic action.

But until the day that we shall have discovered a specific for every disease, what I willingly call the philosopher's stone in pathology, we must not remain inactive, and if we cannot yet surely and directly act against the microbes, we must endeavor to modify the soil-object of their covetousness, if not already in their power, and try to render it unfavorable for their development and multiplication. By all the means put at our disposal, by hygiene and therapeutics, we must strive to provoke that particular activity of nutrition which secures the triumph of organism in the struggle with the infectious agents. All that accelerates nutrition contributes to render the organism refractory to the invasion of microbes and *vice versa*, bad hygienic conditions, great traumatism, impression of cold, mental depressions in bringing impediment to the essential phenomena of nutrition, hinder more or less the cellular metamorphosis, and assimilate the organism to the dead matter so eminently favorable to the development of microbes.

By the specifics only we shall be the artisans of cure, but by the modification impressed to nutrition we shall help the organism to cure itself.

Therefore, let us look upon the future with confidence. We shall die some day, since the progress and discoveries of science, in spite of their greatness, have not yet succeeded in granting us immortality, but what we shall not see, our children, I have no doubt, will.

THE VALUE OF THE HIGHER PITCHED NOTE OF THE RIGHT APEX IN INCIPIENT PHTHISIS.

BY J. HOWE ADAMS, M.D.,

Physician to Medical Dispensary, University Hospital, Philadelphia.

It is a true maxim that no single sign or symptom should be depended on in physical diagnosis; still, at the same time, in cases of suspected trouble, where only slight signs and symptoms can be found; where a positive decision is often demanded by the patient, and anxiously sought by the physician, every little straw adds great weight to the general conception of the case. In no class of cases is this more true than in suspected instances of incipient consumption. This disease is so widespread, and its results so well-known and apparent to the laity, that it is presented in its incipiency oftener to the physician than probably any other chronic disease. Hence, in studying the picture which this dread disease presents at its onset, it is well to consider the due force of all its physical signs. One symptom common to these cases is undoubtedly involved in some uncertainty; this is the higher pitched note often found at the right apex.

Phthisis ordinarily expresses itself first at the apex of one or the other lung; the tissue alterations include change of resonance shown in the pitch and quality. In the region which is involved, the pitch of the percussion note is elevated, as compared with other regions, especially the corresponding side of the chest. The quality of the note becomes more vesiculo-tympanitic. This change is dependent on the diminished elasticity and increased tension in the pulmonary tissue in the involved area.

But, as stated above, in physiological lungs, the right apex often has a higher pitched note, and the authorities on the subject all caution the physical diagnostician to remember this fact in actual practice; for here, in normal lungs, we often find one sign of approaching phthisis. Of course, it takes other signs to complete the diagnosis; the change in rhythm, the harsh character of the respiratory murmur, the change in vocal fremitus and resonance and inspection, besides the loss of weight, the night sweats, and the little increase in temperature, all tell of approaching consolidation. But the physician, groping in the dark, starting with the suspicion that something is wrong, getting this note at the outset, is often misled. At the Medical Dispensary of the University Hospital, there has been considerable study of this note and its variation in health; with the result that it has been determined that, in every normal case examined, there existed some increase in the pitch on the right side. This deviation, in some cases, was most marked, being greater, in many instances, than the notes in a case of genuine, well-advanced phthisis. So suspicious were some lungs examined, that only after long observation could it be decided that no actual trouble existed. Nearly all authorities on this subject state that only a proportion of healthy lungs show this higher pitched note on the right apex, and make no mention at all that this note may be widely divergent from its fellow note at the left apex. Undoubtedly, it requires long practice to detect the higher note in some cases, and the experience at the Medical Dispensary here may be exceptional, yet it is a fact worth emphasizing.

Take the history of the following case, which will illustrate the difficulty of deciding in such cases:

Mrs. B, aged 30, colored, has borne eight children; run down with overwork. History of cough for several months, loss of weight, debilitated, occasional night sweats. Physical examination revealed that there *seemed* to be a slight decrease in movement of the right apex; on percussion, the note was *considerably* higher; on auscultation, the breathing was possibly a little prolonged and slightly harsh. Vocal fremitus and resonance, negative. Other signs, negative; no bacilli in sputum. She was placed on a supportive treatment. Her surroundings were not first-class; her food was not of the best. She was depressed b

the desertion of her husband; she had a nursing baby. It was in the middle of a raw winter, full of sudden changes, which made Phildelphia one of the worst cities in the country for consumptives. She was colored, which was an additional predisposing drawback. Despite these unfavorable circumstances, she continued to improve. The signs grew more negative, until, with the exception of the higher pitched note, she is perfectly well. It is probable that the other changes noticed at first came from the expectation that other familiar signs would follow the history taken. This history has not been exceptional in the dispensary clinic; cases of "cured consumption" occasionally crop up. Undoubtedly, they arose from a few suspicious subjective symptoms, together with the high pitched note at the right apex.

In any case of this sort, it is well not to raise hopes too high. Many, undoubtedly the majority of cases, will prove to be tubercular, but here and there will be a case which can escape through proper treatment. So when our high-pitched, right apex patients lose flesh, or get a cough, while not relaxing vigilance or caution, let us not be too gloomy in our hopes at the outset.

THE BRAIN AND SPINAL CORD.

BY THOMAS W. POOLE, M.D., LINDSAY, ONT.

They may talk of the brain and point with pride,
To its arching dome and its basis wide;
To its cortical cells and its ganglia deep,
And the treasures of thought its chambers keep,
To the wonders which eye and ear enthral,
But the spinal cord surpasses them all.

For the eye will close, and the brain will tire,
And our thought in its very source expire;
While the lordly brow with lowered crest,
Seeks the downy pillow in needed rest;
But the sentinel cord its vigil keeps,
For "the spinal system never sleeps."

The brain may suffice for our waking hours,
When the mind controls its wayward powers.
'Tis by it we laugh and by it we weep;
It leaves us to die when it goes to sleep.
But the tireless cord with a ceaseless play
Is wakeful and active both night and day.

When the powers of life seem about to yield,
The brain is the first to resign the field;
But the spinal cord holds out to the last,
And it often conquers when hope is past,
Survives the weak maunderings of the brain,
And ushers us back to the world again.

Then here is a toast I would have you hail,
The spinal cord from the bulb to the tail.
You surely must honor the famous spot
Where Flourens located "the vital knot."
The cord! the cord! with its mysteries deep,
Which the pyramids guard and the ganglia keep,
The first to grow and the last to fail,
The spinal cord from the bulb to the tail.

Lindsay, October, 1890.

Correspondence.

To the Editor of the CANADA LANCET.

DEAR SIR,—At a meeting of the medical men of Muskoka, Parry Sound, and Nipissing, which took place in Huntsville, last August, to inaugurate a medical society, the following officers were elected: Dr. Howland, President, Drs. Bridgland, B. M. Walton and Thos. Walton, Vice-Presidents; Dr. Hart, Reporter, and Dr. Topp, Sec.-Treas.

It was decided that the name of this association be the "Muskoka, Parry Sound, and Nipissing Medical Association."

Some very interesting papers were read by some of the medical men present, especially that by Dr. Bridgland, on "Pointers in Practice," obtained from a recent course of Post Graduate in New York. The society bids fair to be a success.

I am, yours, etc.,
R. A. TOPP, *Sec.*

Bracebridge, Oct. 3rd, 1890.

To the Editor of the CANADA LANCET.

SIR,—It may not be inopportune for me at the present time to refer to the attitude which, by the public press, I have noticed the Local Board of Health, which is only a committee of the Council, has taken with regard to the appointment of my successor in the position of Medical Health Officer for Toronto.

From the inception of the Local Board under the Public Health Act of 1884, it has appeared that the work to be done by it was considered as but one of the functions of the Council, and hence during all my period of office I found that it was with the greatest difficulty that I could get any matter discussed except along the lines of its possible effect upon the interests of the individual Alderman whose constituent any special offender against the laws might be; nor indeed in many instances was it possible to obtain the Board's permission to take active steps for the removal of

many flagrant nuisances since someone's particular friend would thereby be, in his own estimation financially injured. Now had the complexion of the Board been composed of a fair share of medical practitioners the many questions demanding prompt action would have been considered on their merits. This however does not seem to be what the Council wish, since I see that by the Local Board's action, in their advertising for applicants for the vacant position, they have ignored wholly the sub-committee of medical men who were asked to co-operate with them, although it was stated at a recent meeting of the Council that the Board would fix a time for consultation with such committee.

I can assure the medical profession that unless they take strong action in this matter their views will continue to be ignored. Some Aldermen do not want an independent Board nor perhaps an independent Medical Health Officer.

WM. CANNIFF, M.D., M.R.C.S., Eng.

15 Peter St., Oct. 1890.

Selected Articles.

ANÆSTHESIA.

An Address delivered before the International Medical Congress, Berlin, August 6, 1890.

BY H. C. WOOD, M.D., LL.D.,

Prof. of Therapeutics in the University of Pennsylvania.

(*Continued from Oct. No.*)

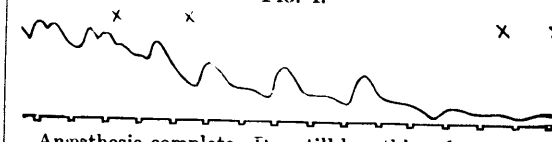
The experiments have all been made upon dogs, by one plan. The carotid artery and also the trachea having been connected with a recording drum, so that the movements of the circulation and the respiration could be consecutively recorded, the animal was anæsthetized, and when the blood-pressure had fallen almost to zero, and the respiration had ceased, or nearly ceased, as the case might be, the remedy to be tried was injected into the jugular vein, through a canula which had been previously inserted.

The more important remedies which have been used by clinicians for the averting of threatened death during anæsthesia, are ether, alcohol, ammonia, nitrite of amyl, digitalis, atropine, and caffeine, alterations of position, and artificial respiration.

Although, at least in America, hypodermic injections of ether have been frequently employed even in ether accidents, such use is so absolutely absurd that it does not seem to me to require any experimental evidence of its futility. Ether in the blood acts as ether, whether it finds entrance through the lungs, through the rectum, or through the cellular tissue ; and the man who would inject ether hypodermically into a patient who is dying from ether, should, to be logical, also saturate a sponge with the ether and crowd it upon his unfortunate victim.

Instead of simply stating the results obtained in my experiments, I have thought it would be more interesting to show reproductions from some of my tracings. The first drug that I shall report upon is caffeine. I have injected it during the cardiac failure produced by choloroform, in doses, varying from 3 to 7½ grains, and have never been able to perceive any distinct alteration in the arterial pressure, and no consistent distinct change of the pulse either in number or force. So far as the experiments go, they certainly indicate that the drug has no influence upon the heart that is being overpowered by chloroform. I may also state here, that it is not possible in any of my tracings to make out any influence exerted by caffeine upon the respiration.

FIG. 4.



Anæsthesia complete. Dog still breathing, ½ gramme of caffeine injected at X X, each.

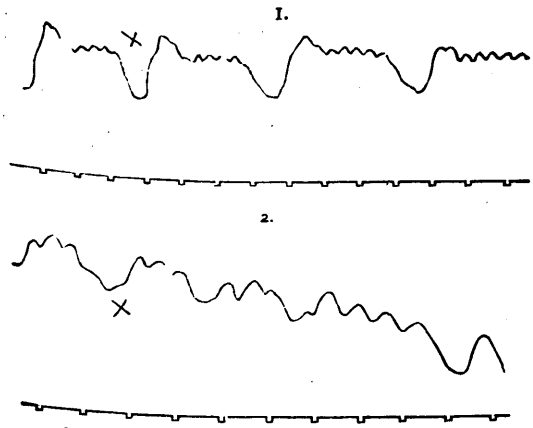
With atropine, I have made a few experiments, the results being almost as negative as with caffeine. Ten c. c. of a 2-per-cent. solution of atropine injected into the jugular vein of a chloroformed animal, altered the rate of the pulse-beat, but had no apparent effect or influence upon the arterial pressure, or upon the respiration, and in no wise prevented final cardiac arrest.

Of all drugs, that which I think is usually most relied upon by clinicians as a cardiac stimulant in anæsthesia, as in other cases of heart-failure, is alcohol. The chemical and physiological relations of alcohol to ether and chloroform are, however, so close, that many years ago I became very doubtful of the value of this drug as a stimulant to a heart depressed by anæsthesia.

These doubts continually grew stronger from what I saw and read as to the effects of the administration of alcohol during anæsthesia, and were finally changed into conviction by the experiments of R. Dubois (*Progrès Médical*, 1883, xi. 951), who found that in the animal to which alcohol has been freely given, much less chloroform is required than in the normal animal, to anæsthetize or to kill ; or in other words, that alcohol intensifies the influence of chloroform and lessens the fatal dose.

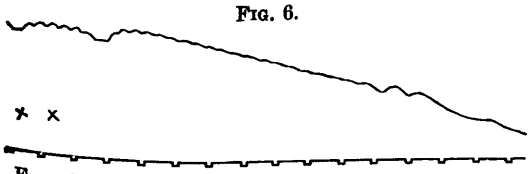
In my own experiments with alcohol an 80-per-cent. fluid was used, diluted with water. The amount injected into the jugular vein varied in the different experiments from 5 to 20 c. c.; and in no case have I been able to detect any increase in the size of the pulse, or in the arterial pressure, produced by alcohol, when the heart was failing during advanced chloroform anæsthesia. On the other hand, on several occasions, the larger amounts of alcohol apparently greatly increased the rapidity of the fall of the arterial pressure, and aided materially in extinguishing the pulse-rate.

FIG. 5.



Tracings showing effects of alcohol injection.
No. 1. four cubic centimetres of 80 per cent. at X.
No. 2. five cubic centimeters of 80 per cent. at X.

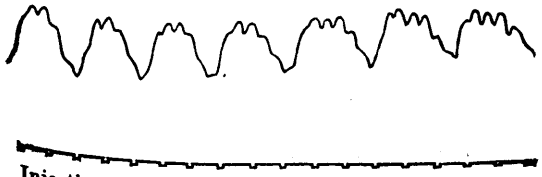
FIG. 6.



Experiment showing the effect of injecting twenty cubic centimetres of alcohol in advanced chloroform anæsthesia. Injection made at the beginning of tracing between X and X.

The effects of ammonia upon the failing heart of chloroform anæsthesia, has been in my experiments uncertain; sometimes distinct, although very fugacious and sometimes imperceptible. Twenty cubic centimetres of a 10-per-cent. solution of aqua ammoniæ fortior (U. S. Pharmacopœia), in some case produced an immediate rise in the arterial pressure, and even fugaciously registered itself in the respiratory rate, but perhaps more frequently it failed in its influence.

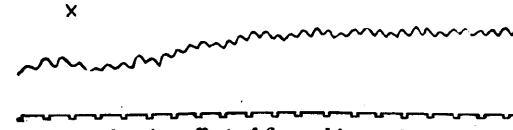
FIG. 7.



Injection of twenty cubic centimetres of a 10-per-cent. solution of aqua ammoniæ fortior. Injection given just after beginning of tracing.

The influence of injections of digitalis has been in a number of experiments, very pronouced in producing a persistent gradual rise of the arterial pressure with an increase in the size of the individual pulse-rate. In several instances, death was apparently averted by its injection and I saw in one or two cases where large amounts of the digitalis had been employed, sudden systolic cardiac arrest, indicating that digitalis, if in sufficient amount, is able to arrest itself victoriously in opposition to chloroform. Moreover, when I have given chloroform to dogs whose hearts were already under the influence of digitalis, there has seemed to be a peculiar steadying or sustaining power combating the circulatory depression naturally produced by the anæsthetic, and I believe that in all cases of weak heart in man a full dose of digitalis before the administration of chloroform would greatly lessen the danger of cardiac collapse.

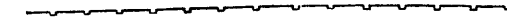
FIG. 8.



Tracing showing effect of five cubic centimetres of tincture of digitalis in advanced chloroform anæsthesia. Injection given at X.

With the nitrite of amyl four experiments were made; in some of these from 4 to 10 drops of the nitrite of amyl were injected in the jugular vein; in others the nitrite was used by inhalation. No distinct effect upon the arterial pressure was in any instance produced, and usually no alteration in the size of the pulse-waves, although sometimes the pulse did appear to be a little fuller.

FIG. 9.

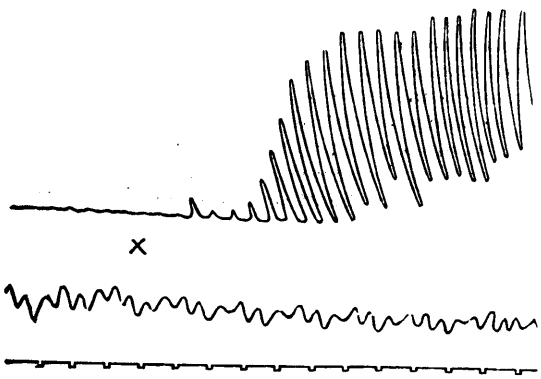


Tracing showing effect of nitrite of amyl, given freely by inhalation, upon the circulation. Inhalation begun at X.

Of all my experimental results, those which have been reached with strychnine have been the most surprising. The injection of strychnine into the jugular vein usually produced a gradual rise of the arterial pressure, and always caused an extraordinary and rapid increase in the rate and extent of the respiration. Thus I have seen the respiration, which had practically ceased for ten seconds, suddenly, under the influence of an injection of two-tenths of a grain of strychnine, become at once very large and full, and reach a rate of 130 a minute.

A series of elaborate experiments made upon the effect of the position of the animal on the blood-pressure in the carotid and other arteries, has very clearly proven that the body of the animal whose circulation has been paralyzed by chloroform, acts in a measure like a tube filed with fluid. Thus if the feet of the dog were raised verically above the head, whilst the latter remained upon the table, an immediate rise of pressure occurred, even though the heart had entirely ceased beating; provided that the head of the animal was kept upon a level with the table. If, however,

FIG. 10.



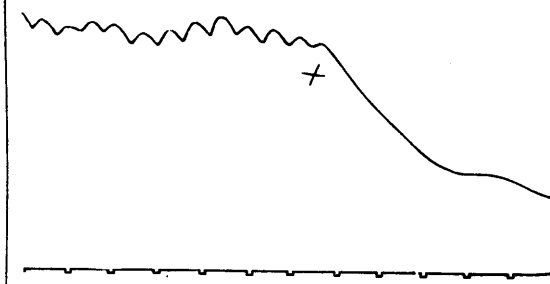
Tracing showing effect of injection of strychnine, after breathing had ceased, in an advanced chloroform anæsthesia. 0.193 grain of sulphate was injected at X.

the head of the animal, was depressed below the level of the table for a distance equal to, or greater than the length of the body of the animal, a decrease of the arterial pressure occured at once, although the animal was in a vertical position. The phenomena observed were precisely such as would have been produced if the canula had been inserted into a tube filled with fluid, instead of into the carotid artery, and the elevation and depression of this tube had registered itself on the recording drum, in obedience to the ordinary laws of hydrostatics. The phenomena were entirely independent of any beat of the heart, and were readily produced when the animal was dead, provided the death had not occurred too long previously. Sometimes, even a very few minutes after the cessation of the heart-beat, it was impossible to produce the changes of pressure upon the drum. This, I believe, to have been due to coagulation of the blood, occurring very early after death to a sufficient extent to interfere with the liquid properties of the fluid. In no case was any effect upon the respiration produced by change in position of the animal. In a number of cases, however, when the feet were elevated the heart, which had entirely ceased beating, recommenced its work, and I have several times seen a pulse entirely disappear when the animal was taken from the vertical to the horizontal position. On the other hand, very frequently it was impossible to affect the cardiac action by changing the position of the animal. Nevertheless, the phenomena spoken of occurred too frequently to be a mere outcome of chance, though I several times noted that the heart was usually more affected by alternately elevatlng and depressing the feet of the animal, than by keeping it in a steadily elevated or horizontal position.

When the circulation has practically ceased, under the depressing influence of an anæsthetic, inverting the body must cause the blood which has naurally collected in the enormonsly relaxed vessels of the abdomen, to flow into the right side of the heart and distend it, and this distention—this increase of pressure—appears at times to have a sufficient momentary influence to stimulate the failing organ.

The theory which has been advocated by some therapeutists, that inversion of the body is of value in the accidents of anæsthesia, because it causes the vital centres of the brain to be supplied with blood, is probably incorrect. The respiration in

FIG. 11.



Tracing showing effect upon the heart of a dog which had been vertical, with his head on level of the table, of bringing him into horizontal position. Feet dropped at X.

anæsthesia fails, not through want of blood in the respiratory centres, but because the blood contains a poison which paralyzes these centres.

The most remarkable results which I have reached in bringing about the recovery of animals, to all ordinary intents and purposes dead, were obtained through the artificial respiration. Thus, I have seen an animal, in which no respiratory movements whatever had taken place for two minutes, and in which, during that time, no movements of blood had occurred in the carotid artery, and in which, therefore, the heart had ceased to beat, rapidly and permanently restored by artificial respiration.

At one time in these researches, it appeared as though after any dose of chloroform by inhalation the animal could be resuscitated by artifical respiration, even though heart and lungs were completely paralyzed by the drug; but finally I did find a case in which artificial respiration failed.

The results of my experiments with the lower animals may be summed up: that nitrite of amyl,

caffeine, and atropine are of little or no use in chloroform-poisoning; that alcohol, when given in small amounts, has no influence, but that when given largely materially assists in paralyzing the heart and producing fatal results; that ammonia has some little influence upon the heart, but that of all substances tried digitalis is by far the most powerful in stimulating the failing circulation; indeed, my experimental results indicate that it is the only known drug which is of any real practical value in such cases. Next or even before digitalis, strychinine seems to be of value in the accidents of anæsthesia, because, whilst having some influence on the circulation, it powerfully affects the respiration. For many years chloroform has been used in practical medicine as the physiological and practical antagonist to strychnine, and it seems rather odd that strychnine should never have been employed as the practical antagonist to chloroform.

The one measure which in practical value far surpassed all others for the restoration of the dying animal was artificial respiration, and I have no doubt that a great majority of the deaths which have occurred in man from anæsthesia might have been avoided by the use of an active artificial respiration. The difficulty with artificial respiration as it has been hitherto practised upon man, after the Sylvester or other methods, is its inefficiency; whereas the artificial respiration which I used on animals was very active—indeed, much more efficient than natural breathing in causing circulation of air through the lungs, and therefore in removing excess of the anæsthetic from the residual air in the lungs and from the blood.

The use of what may be called "forced" artificial respiration by the physiologist, so naturally suggested a similar practice in man, that the celebrated John Hunter invented for the purpose an apparatus which consisted of a bellows so constructed that when it was extended one compartment drew in air from the lungs, whilst the other drew air from the atmosphere; and when it was closed the process was reversed, the fresh air being thrown into the lungs, the foul air into the atmosphere. In 1867, Richardson, of London, invented an apparatus more elegant and portable, although identical in principle with that of John Hunter's; but I have not found that either Hunter or Richardson treated by forced artificial respiration an actual case of disease or poisoning. In 1875 (*Boston Medical Journal*, vol. xxi.), Dr. John Ellis Blake reported a successful case of aconite-poisoning, in which life was apparently saved, although there was no pulse for over three hours, by artificial respiration, with the use of oxygen. In this case Marshall Hall's method was at first used, but later, a small rubber tube was connected directly with a copper reservoir of condensed oxygen, the other end of the tube terminating in a small nozzle, which was inserted in one nostril. Four hundred gallons of oxygen were thus used, but how far the force of the compressed gas was employed to dilate the lungs is not very clear; and it is somewhat doubtful whether this case should be considered as one of forced respiration. The first physician to use forced respiration in actual human poisoning, with a clear idea of its value and power, so far as my reading goes, was Dr. George E. Fell (*International Medical Congress*, Washington, 1887).

It is plain that the bellows constructed by John Hunter and by Richardson are unnecessarily complex and faulty in principle. There is no need whatever of drawing the air out of the fully filled lungs. Every physiologist knows that when the muscular system is completely paralyzed by woorari or even by death, that the chest-walls have sufficient elasticity to force air out of the lungs, and all ordinary laboratory apparatus for artificial respiration is based upon this fact. For forced artificial respiration in man an ordinary bellows of proper size is all that is required for the motive power.

The real difficulty—the point to be especially investigated and studied—is as to the connection between the bellows and the lungs. Hunter and Richardson simply placed a tube in one nostril, closing firmly the other nostril and the mouth of the subject.

Dr. Fell at first used a tracheal tube, the insertion of which, of course, necessitated the performance of tracheotomy. In one case, however, a simple mask covering the mouth and nostrils was a perfect success. I have had no opportunity of trying the apparatus on the living, but have made a series of experiments upon dead bodies, which which have demonstrated that usually a face mask is all that is necessary for the performance of artificial respiration. Before using the mask the tongue should be well drawn forward, and, if necessary, fixed in this position by an ordinary piece of suture silk run through it, which can be held in the hand of the operator. If in any individual case the mask fails, an intubation tube may be introduced into the larynx. I do not believe that it is ever necessary to perform tracheotomy.

Dr. Fell's apparatus consists of a pair of foot-bellows by which air is forced into a receiving chamber, which is connected with an apparatus for warming the air, and a valve which can be opened and shut by a movement of the finger. This valve in turn leads to the tracheal tube. When the valve is opened the air rushes through the chamber into the lungs and expands them; the finger is lifted, the valve shuts, the lungs contract; and so the respiration goes on. I have no doubt that this apparatus is very efficient in practice, but it is open to the serious objection of being unnecessarily complex and costly.

A much simpler, cheaper, and probably equally efficient apparatus may consist simply of a pair of bellows of proper size, a few feet of India rubber tubing, a face mask, and two sizes of intubation tubes; there should also be set in the tubing a double tube, with an opening similar to that commonly found in the tracheal canula of the physiological laboratory, so that it is in the power of the operator to allow for the escape of any excess of air thrown by the bellows. I suppose this whole apparatus could be prepared at the expense of less than five dollars, and it seems hardly necessary to point out the probable value of this simple apparatus in various narcotic poisonings, and other accidents in which death is produced by a paralysis of the respiratory centres, of temporary nature. The proper use of it could be taught to persons without special medical skill, so that it not only ought to form a part of the surgeon's outfit, but might be of great service in life-saving stations, about gas-works, etc.

In conclusion, I may be allowed to state, that if the results and deductions arrived at in this address are, as I believe, correct, the rules for the proper treatment of accidents during anæsthesia can be summed up in a very few words :

Avoid the use of all drugs except digitalis and ammonia.

Give the tincture of digitalis hypodermically.

Draw out the tongue, and raise up the angle of the jaw, and see that the respiration is not mechanically impeded.

Invert the patient briefly and temporarily.

Use forced artificial respiration promptly, and in protracted cases employ external warmth and stimulation of the surface by the dry electric brush, etc., and above all remember that some at least, and probably many of the deaths which have been set down as due to chloroform and ether, have been produced by the alcohol which was given for the relief of the patient.—*Med. News.*

THE PROGNOSIS OF LATERAL CURVATURE IN YOUNG GIRLS.

At the request of the Secretary of the Society, a gentleman who is competent to decide on the merits of papers presented to this body, I have made an attempt this evening to discourse upon the above title. I am sure that the practititioner of medicine is always already to express his views upon the prognosis of lateral curvature. The impression prevails that the deformity is progressive, that a slight curve ends in a hunchback, and that something mechanical must be applied in order to prevent this result. At the outset, then, let me state my conviction that one seldom has an opportunity of observing the evolution of a lateral curvature of the spine. Somehow or other the apparatus we employ or the treatment we suggest succeeds (so to speak) in arresting the deformity. For ten or twelve years, while interne at the Hospital for the Ruptured and Crippled, and while in charge, also, of the Out-patient Department, I had an opportunity of following a large number of cases of laternal curvature in young girls, and the routine treatment was this : Applied a Knight brace, which was made to fit the body as nearly as possible, made of steel, with bands half-encircling the body (the posterior half) from axilla to axilla, from ilio-costal space to ilio-costal space, from trochanter to trochanter, and the terminal ends of these bands, connected by uprights, passing from the axilla down to the trochanter. One or two bars were placed in the middle half, either side of the vertical bearing of the spine, a leather or steel plate passed from one of the posterior bars to the lateral bar, the object of which was to make pressure against the projecting ribs, and this steel framework, properly upholstered, was held in place by canvas fronts. Shoulder-straps were employed to complete the appliance and we had thus a steel and canvas encasement, which the patient wore by day, removed by night, and reported from time to time, in order to see that a reasonable fit had been secured. In addition to the mechanical appliance thus employed, each patient was instructed to exercise on parallel bars five or ten minutes twice a day, with or without apparatus. The parallel bar exercise consists in suspending themselves by the arms and hands, allowing the weight of the pelvis and limbs to make a certain amount of traction on the column. No other exercises were employed.

Simple as this treatment was, and crude as it seemed to many to be, I was enabled, at the end of eleven years' residence in the hospital, to express my opinion that I had never seen a complete evolution of lateral curvature of the spine. That is to say : I had not seen a case in the early stage, where osseous changes were absent, proceed to the development of a marked rotary lateral curve, with prominence of one shoulder, enlarged letter S deformity, shortening of stature, and an overlapping of the ilium by the free ribs.

It is true, during this period, while the plaster of-Paris jacket was so popular, that I read and heard of the cases wherein the treatement I have just recorded had been employed, and where the patient stated that the deformity had increased perceptibly, to be relieved only by the plaster-of-Paris jacket. Lectures were held upon our cases. These lectures were reported in the journals, and occasionally some old patient, who had been treated right royally at the hospital, would return to show what a wonderful change had been affected by this new treatment.

In 1884, relieved from hospital duty, I became

quite enthusiastic in the plastic treatment of this deformity. I secured by reason of my long personal acquaintance with many dispensary patients, a large contingent at my clinic. I familiarized myself with the details of the jacket, studied it as I would an art, and after a year or two acquired a fair degree of skill in its application. I treated not only my clinic, but my private patients with the plaster-of-Paris corset, and combined with this treatment certain exercises said to emanate from Mr. Bernard Roth, of London. After three years of this kind of practice I was enabled to state that I had seen the evolution of a rotary lateral curvature. So that, in 1887, during the summer, my enthusiasm had suffered such a shock that I decided to abandon the plaster-of-Paris corset as a mode of treatment. During this time however, I had employed occasionally certain other forms of steel appliances with equally unsatisfactory results. Visiting Mr. Roth, of London, I gathered from him the opinion that medical gymnastics were all that is necessary to prevent deformity, and, in many instances, to correct. This gentleman asserted quite positively that the combination of steel and plastic appliances with gymnastics, employed once or twice in the twenty-four hours, the object of which was to develop muscles, were counteracted most efficiently by steel or plastic appliances during the rest of the time.

In the fall of 1887 I began the treatment by medical gymnastics, as I had learned it from Mr. Roth, and I am happy to say that the majority of my cases have done well. I do not mean to state that many have been cured, but I do mean to state that in rare instances only has the deformity increased, or have the parents and patients been dissatisfied with the result.

During this period of eighteen or nineteen years, I have seen a large number of patients who presented a slight degree of deformity, wherein no appreciable increase has taken place even without treatment. In many instances I have recommended an out-of-door life, horse-back riding, rowing, and deportment to patients who lived in the country, and I have learned from the family physicians, years afterward, that the deformity had become scarcely appreciable, and that the cases had given them no more anxiety. I have become therefore, an advocate for an out-of-door life in young girls who were crowded at school, who keep to long hours in any capacity, and who have acquired a slovenly position in standing or sitting.

With the Swedish-movement cure I have had no extended experience. For the past three or fore months, however, a gentleman, Mr. Lindhe, recommended to me very highly by Dr. Purdy, of this city, has taken charge of my charity cases at the hospital out-patient department, and has labored daily with a class numbering about thirty. The movements differ somewhat from those of Mr. Roth, in that more force is employed. This gentleman has consented to bring a number of my patients here this evening and show you his method. The testimony of the parents and girls themselves is that they have improved. The gentlemen present will agree with me that the only way to predictate any results would be to examine carefully with a scoliosometer, and repeat the examinations months or years afterward. The difficulties attending a careful measurement are so great that I have come to rely upon a few salient points in the way of record, and upon the eye in determining the amount of improvement or the reverse. My results, then, are measured in this way.

The foregoing remarks are necessary, I think, to a proper study of the subject in hand, namely—The Prognosis of Lateral Curvature in Young Girls. The family physician is, or ought to be, consulted quite early any kind of deformity. The deformity now under consideration is usually first observed by the dressmaker. The attention of the parents is called to inequality of the two sides. One shoulder-blade projects a little more than the other; one hip may be higher than the other, and the dress skirt on one side must be a little longer. There is, in a word, a lack of symmetry.

The different methods of treatment discussed are sufficient to encourage the practihoner in the management of his cases. It is sufficient, thus, to be forewarned.

The average physican can recognize an early case of lateral curvature, provided he take the trouble to examine. The following method, I think, will enable anyone to discover a curve, however slight. Let the patient be stripped down to the hips, not the waist-band, but down to the hips; let the skirts be fastened around the pelvis just above the trochanters major; have the shoes removed, let the patient stand in stocking-feet; then let a good light be brought to bear upon the back. Any lack of symmetry can be easily recognized One wants to note the position of the scapulæ, whether one is on a higher plane than the other, whether one is farther removed from the spinous processes or the vertical bearing than the other, whether one projects farther backward than the other. Examine the tips of the shoulders to note whether one shoulder is higher than the other. Compare the ilio-costal spaces, note whether one is deeper, or whether the curve is longer than the other. Finally, the deviation of the spinal column itself, the locality where the deviation occurs, and the projection of the ribs on one or the other side should be noted. A front view can be had, which will enable one to determine any rachitic changes in the sternum or any inequality of the mammæ. In lateral curvature it must be remembered that one mamma is larger than the other, and the larger mamma corresponds to the side on which

the concavity of the curve is found. Let the patient now bend forward as far as possible at the hips without bending the knees, and aim to touch the floor with the fingers. This will show the inequality of the chest-walls, will show how much more prominent the ribs are on one side than on the other. One can also note the prominence or the reverse of the spinous processes, and can thus determine quite easily that part of the column where the rotation is greatest. No examination can be complete, however, without measuring the length of the limbs, not only with the tape-measure, but also in an upright position, by placing books of various thicknesses under each foot, and noting how much thickness is requisite to equalize the pelvis and to reduce the actual deviation to the minimum. Dr. Morton, of Philadelphia, has a very ingenious contrivance for this, but it is practically the same as the method just mentioned, namely—books of various thicknesses.

With the observations completed, a prognosis can be readily given. I, of course, do not mean to say that the prognosis can be given independent of any treatment employed, but what I mean is this: The physician who has made the examination just described, will adopt some method of treatment that will, as a rule, result favorably. The difficulty is not in one's ignorance of what to adopt, but in the lack of interest manifested by the parents or the patient. Again, physicians are so uncertain about the different forms of apparatus that they give their opinion in an uncertain sort of way, and it is not regarded as of much value. The prominence given to athletic sports in general now, for both sexes, I think will enable us to give a better prognosis in our cases. Whatever course of exercises is decided upon, it must be carried out thoroughly. A daily drill is requisite. It is not sufficient to say to the patient, "Go home and exercise," or "Take this and take that." It is important to show the patient how to exercise. If a brace is to be employed, it should be made to fit the patient, and should not be worn at night. If I find a cardiac murmur, I do not prescribe a course of exercises, unless I can direct them myself and know the influence on the organ itself. Such patients I prefer to encase in a steel apparatus.

This deformity, like many diseases, is self-limited. A little twist is developed in the back, one shoulder projects a little more than the other, and a curvature results. The curvature is so slight that it is not recognized, and the patient grows to womanhood without ever knowing that she has a curve. Such instances do occur. They are not frequent, only it is important to know that all curves do not go on to great deformity. In my opinion the greatly deformed cases are the exception. Considering the number of girls who have one hip higher than the other, or one shoulder more prominent, it is astonishing that we do not have more exaggerated deformities with our present ideas of the progress of such cases. It simply means that a great deal too much stress can be laid upon a slight deformity, while repeated observations will enable one to determine whether it really is increasing or not. If such a patient had been advised to take better care of the health, to cultivate a better deportment, to take every opportunity for improvement of the muscular system, one can reasonably give a good prognosis.

To conclude, then, we see that The prognosis of lateral curvature in young girls depends a great deal upon the early recognition of the deformity. It will also depend upon the thoroughness of the treatment employed. If an apparatus is used, it must be made so as to meet the indications and must be worn for a long time, from two to five years. If gymnastics are prescribed, the patient must be taught the different movements, must be drilled in the same after a good knowledge is acquired, and the exercises should be continued at home for a year or two. If it is found that the deformity is very slight and the patient can lead an out-door life, and is not crowded too much at school, a good prognosis can be expected if only the ordinary rules governing general health are observed. In the more advanced cases it is not possible to correct the deformity to any great extent. Indeed, it may safely be assumed now that no form of treatment yet adopted is equal to the correction of an osseous deformity. All that we can hope is a better position in standing or sitting, a better carriage, a filling out of the chest more symmetrically, and an ability on the part of the patient to hide the deformity.—Dr. Gibney in *Med. Rec.*

THE TREATMENT OF GENU VALGUM AND OTHER DEFORMITIES BY MEANS OF THE SCREW CLAMP.

Having frequently experienced difficulty in remedying deformities of children suffering from knock-knee and bow-legs by means of the usual methods, and being unwilling to resort to the operation of osteotomy, it occurred to me that it might be possible, by rapidly breaking the bone at the wished-for spot, to rectify the deformity. I concluded that if the bone could be broken without injury to the epiphysis, I should have to deal with a simple fracture which would run its course without complication, and that little harm could result to the soft parts from the pressure, provided it was not of long duration, care being taken not to press on any important vessel or nerve. For this purpose, after many experiments, I had a clamp manufactured. It consists of two curved arms, which can be approximated or separated as may

be wished. These are covered with thick India-rubber, and are connected by means of a strong pivot. Attached to this pivot is the screw, into one end of which is fitted the appliance for making pressure, the other end terminating in a strong handle. This arrangement of the arms and of the screw, connected by a pivot, admits of pressure being applied at any point, and counter pressure at any two points that may be desired. Underneath this pivot is a nut, by means of which the arms and the pivot can be firmly screwed together.

In operating on a femur for genu valgum, in order to break it, a wedge-shaped appliance with rounded edge of polished steel is fitted to the screw. One curved arm of the clamp is placed on the outside of the femur just above the epiphysis, the other arm four or five inches higher up the limb. The screw with the wedge is applied two or two and a-half inches above the condyle, on the inner side of the bone. Having decided upon the exact position of the points of pressure, the clamp is removed from the limb, and must be firmly screwed together by means of the nut which is on the under side of the clamp. A wrench for the purpose is supplied by the makers. The clamp having been reapplied in the desired position, which has been previously marked on the limb, must be carefully held there by an assistant; the screw must be quickly and forcibly turned, compressing the wedge in on the bone, and generally in about twenty or thirty seconds it will be heard to break at the point of pressure. For bow-legs I use a flat appliance, which is covered with felt or India-rubber. The clamp having been applied to the limb, the bones are forcibly pressed into the wished-for position.

In the cases I have operated on, I was surprised at the very small amount of injury inflicted on the skin. After the third day, with one exception where the skin got entangled, but slight ecchymosis remained at the points of pressure. All my cases ran the ordinary course of simple fracture. I do not pretend to recommend the indiscriminate adoption of this method of cure for genu valgum. When the patient's age exceeds twelve years, the great amount of pressure required to break the bone becomes a matter for serious consideration.

At first I found it extremely difficult to cut across the bones of very young children, owing to their bending. This difficulty has been overcome by approximating the arms of the clamp. The clamp has proved successful with a girl, aged 14 years and 11 months, and also with one 17 years of age.

From all I can see, I believe this operation for genu valgum, in trained hands, will obviate the necessity for osteotomy in many cases. An experienced assistant who has learned to work with the operator is also very necessary. The following is the history of some of the patients upon whom I have already operated :—

M. L., aged 3 years, admitted November 16th, 1887, an ill-nourished child. Both legs were badly bowed at lower third; the outer ankles touched the ground when she attempted to walk. December 3rd. Fractured left tibia and fibula with a screw clamp, using felt pads at the points of pressure; put up the limb quite straight in a pasteboard splint, having enveloped it in Gamgee tissue. January 31st, 1888. Left leg rapidly recovered as an ordinary simple fracture; now quite straight. Fractured right tibia and fibula to-day, using the same clamp, and having straightened the limb, put it up in the same manner as the left leg. April 6th. Right leg quite united and straight. Patient dressed and up; stood with the assistance of a chair. September 22nd. Had been in the country for five months, was much improved in health; limbs quite straight; could walk holding on to the nurse's hand.

J. K., aged 3½ years, admitted June 5th, 1888, suffering from bow-legs. He was a patient of Dr. Ashley Cummins, who kindly asked me to operate. June 6th. I fractured in the lower third, and straightened the right leg, which was treated in the same manner as my first case. 20th. Fractured and straightened left leg. July 26th. These fractures having united without any trouble, the patient was discharged cured to-day.

M. S., aged 11 years and two months, always suffered from double genu valgum, of such severity that she could at no time walk more than 200 yards without assistance; she had previously undergone a variety of treatment, and my colleague, Dr. Ashley Cummins, having decided to perform osteotomy, consulted me with regard to the matter. On expressing to him a wish that I should be allowed to try if it would be possible to fracture her thigh with the screw clamp, he kindly handed her over to me for treatment. On July 25th, 1888, I operated in the manner described, using a timber wedge covered with felt to fracture her left femur. The bone was broken 2½ inches above the joint. There was no difficulty in the operation. The arms of the clamp were separated 4½ inches; the time of pressure about 25 seconds. There was no skin wound. The limb having been enveloped in Gamgee tissue a long splint was applied. 29th. Examined her thigh to day. There was only slight ecchymosis at the points of pressure. She had no pain; temperature normal. September 13th. Her limb was quite straight and firm; she was able to stand with slight assistance to have her photograph taken. 14th. Fractured her right femur to-day, using a steel wedge, which was covered with India-rubber. There was no skin wound. Put her up as before in Gamgee tissue and a long splint. 23rd. Limb quite straight, doing well; temperature normal. 29th. Limb put up in a plaster bandage. October 26th. Doing well. Limb quite straight.

H. W., aged 3½ years; double knock-knee. May

22nd, 1889. Made three attemps to fracture his right femur, but failed, owing to the elasticity of the bone; the arms of the clamp were separated from 3½ to 4 inches. May 25th. Fractured his left femur in the first attempt; arms of the clamp separated 3½ inches; applied a curved long splint. June 22nd. Bone united. June 30th. Fractured his right femur 2 inches above the joint in the second attempt; arms of clamp separated 3½ inches. July 4th. Bruises have quite disappeared. Aug. 1st. Bones firmly united, and on August 30th the little fellow was walking about; he has been cured with a slight outbow; result is extremely satisfactory.

J. C., aged 13 years 14 days; knock-knee, right extremity. June 18, 1889. Succeeded in fracturing her right femur on the fifth attempt; arms of clamp open to 4½ inches; there was but one very slight abrasion; applied a curved long splint. June 19th. No pain or uneasiness. June 27th; Opened the bandages; skin abrasion quite healed. limb in good position. August 1st. Bone firmly united; deformity completely cured.

E. B., aged 1½ year; angular deformity of left radius and ulna, of which no satisfactory history could be given. September 9th, 1889. Fractured radius and ulna quite close to the wrist-joint, using the steel wedge; arms of clamp open to 2 inches; straightened the limb and put it up in side splints. October 10th. Bones united; limb quite straight; discharged cured.

J. R., aged 2½ years; both legs badly curved in the middle third. March 9th, 1890. Under chloroform, the arms of the clamp being open 2½ inches, fractured his left tibia and fibula. Having straightened the limb, applied side splints as usual. The clamp was then applied to his right leg, and it was treated in the same manner as the left. March 12th. Doing well.

E. J., aged 6 years; double knock-knee and anterior curvature of both legs. January 16th, 1890. Under chloroform, fractured her left femur in first attempt, arms of the clamp open to 4½ inches. Put her thigh up in a curved long splint in the usual manner. The clamp, with arms open to 4 inches, was applied to her right leg, the bones were broken in the lower third, the limb straightened and an iron back splint applied. January 16th, 10.30 p.m. On account of pain opened and examined her leg; at the points of pressure, where the clamp was applied, there is nothing to be seen but a slight redness. Reapplied the splint. February 21st. The broken limbs have united without trouble, February 22nd. Under ether treated the right femur in the same manner as the left; also rectified the deformity of her left leg. February 28th. Child doing well; no pain since operation. March 26th. Fractured right leg, upper and middle third tibia and fibula, making in all five fracture operations. June 1st. Walking about about quite cured.

To my colleague, Dr. Ashley Cummings, I am indebted for his valuable assistance, and for affording me an opportunity of operating on some of his patients.

The screw clamp and appliances are manufactured by Messrs. Arnold and Sons, West Smithfield.—Nicholas Grattan, F.R.C.S., in *Hosp. Gaz.*

CHLORALAMID.

Chloralamid is properly a chloralformamid or formidate of chloral with the formula $CCL_3CH\begin{cases} OH \\ NHCHO. \end{cases}$

It is chemically a union of chloral anhydride (CCl_3CHO) with formamide ($CHO.NH_2$).

Prof. J. Von Mering was its discoverer and E. Schering, of Berlin, its exclusive manufacturer. It occurs in the form of colorless, very faintly but not unpleasantly bitter, non caustic, odorless crystals, melting at 239° F. and soluble in from nine to fourteen parts of cold and less of warm water, in one part of absolute and one and a half parts of ninety-six per cent. alcohol. To understand its time of action it is well to remember that it requires five hours to dissolve twenty grains in two ounces of water, and only fifteen minutes when the memstruum is one dram of rectified spirit. No precipitation occurs on adding the alcoholic solution to water.

TESTS.

Upon heating chloralamid to its melting point, 239° F., chloral is liberated and may be tested separately. Heated with a solution of potassa it emits odors of chloroform and ammonia. A few grains in a solution of four drops of ninety per cent. carbolic acid in one-half ounce of strong sulphuric acid gradually heated to boiling gives rise to a bright-red color and a strong odor of chlorine. With the same test phenacetin produces a dark purplish-brown mixture with a strong acetous odor and sulphonal, a bright-green, changing to dark green upon the further addition of strong sulphurous acid. Fehling's and Pavy's solutions are not affected by chloralamid.

INCOMPATIBLES.

The drug is rapidly decomposed by water heated above 140° F. and by caustic alkalies, and slowly by alkaline carbonates.

ADMINISTRATION.

The dose varies from fifteen to sixty grains, while the majority of experiments rely upon a single dose of thirty grains and rarely find forty-five grains necessary. A few consider this last dose as the limit of safety. A child of eleven years of age was given seven grains, and another

four and a half years old, five and ten grains. In any case it is better, especially with new drugs, to commence with the smallest dose and increase cautiously. To secure the best results the drug should be administered from one to one and one half hours before bed-time. It may be prescribed in powders alone or triturated with oleosacchara fœniculi, capsules, wafers or dissolved in wine or brandy, to which water may be added as desired. Some difficulty will be experienced in taking the powder in water, tea or milk, as advised by a few, on account of its slow solution and tendency to adhere to the sides of the vessel. It is better to wash down the powder with a draught of milk, weak tea or water. An advised prescription is :

R.—Chloralamid . . . . . gr. xiv.
Acidi Hydrochlorici Diluti. gtt. vi.
Syrupi Rubi Idæi. . . . ʒ ii.
Aquæ q. s. ad. . . . . ʒ ii.
Sig.—To be taken in one or two doses.

As an enema, in which form it is unirritating and slow in action, we may use :

R.—Chloralamid . . . . . gr. xlv.
Acidi Hydrochlorici Diluti gtt. iii.
Alcohol . . . . . ♏ xx.
Aquæ . . . . . ʒ iii.

So administered it is considered by a few to be most reliable in its action.

However used it must be remembered that its solution is not to be heated.

PHYSIOLOGICAL ACTION.

Locally, chloralamid has been found to be absolutely free from irritation, and even where a ten per cent. solution has been applied to the delicate conjunctiva. Internally, no effect has yet been discovered upon digestion and circulation, except in relation to the vaso motor centre. Here we have a trivial difference in opinion. A single authority (Langgaard)—a possible pessimist, for he also makes the same statement regarding the respiratory centre—affirms that blood pressure is lowered through depression of the vaso motor apparatus. Reichmann admits that this is slightly so, but Von Mering, Zuntz, Prof. Leech of Guy's Hospital, Geo. P. Cope of Dublin and many others deny this action, while Rabow, of Lausanne, goes still further and states that the formamide, liberated from the chloral, stimulates the vaso motor centre in the medulla and raises blood pressure.

Chloralamid has the property of inducing an apparently natural sleep, commencing in from one-half to three hours and lasting from six to ten hours. The usual interval between the administration of the dose and the advent of sleep is from one to two hours, but this depends so greatly upon the slow solubility of the drug in the watery fluids of the stomach, that it is possible that absorption may not be completed or sleep commence until the morning after the evening dose. This delay might be obviated by employing an alcoholic solution. In some cases the sleep is interrupted and even many failures are reported. However, all this depends upon the dose administered, forty-five grains, equalling thirty grains of chloral hydrate, being considered necessary to insure certainty. The frequency of the failures may be estimated from the fact that Dr. Cope reports only four per cent., Dr Williams six and one-half per cent. of all cases, and Prof. Leech no failures in nineteen patients. Some consider the sleep to be deeper than that obtained with chloral.

To what this hypnotic action is to be attributed is, as yet, only a matter of conjecture. Dr. Eugen Kny supposes that, in the alkaline blood, chloral is gradually liberated, and he partially bases this opinion upon the presence of uro-chloralic acid in the urine. It would seem, however, that more depression would have been discovered if such were the case. The only depression positively established was that of reflex action in frogs after injecting one-third to one-half of a grain.

INCIDENTAL EFFECTS.

While no unpleasant after-effects were noticed by many authorities, no disturbance of the heart, respiration, temperature, kidneys, digestion, or appetite (but rather improvement of appetite, according to Dr. D. R. Paterson), a few have occasionally found slight head-ache upon awakening, alone or with lassitude and a desire to sleep during the next morning or entire day. Among the other unusual effects are thus arranged in order, commencing with those most frequently reported : slight or severe vertigo, thirst, nausea, dryness of the mouth, loss of appetite, slight delirium, vomiting, cardiac weakness, rapid and feeble pulse and restlessness which necessitated forcible restraint. The more severe symptoms appeared after large doses, over thirty grains, and were not consecutive or persistent as is the case with sulphonal. Patients do not seem to become accustomed to its use, nor is there evidence that the drug is cumulative in action.

One hour after a dose of sixty grains, there have, in two instances, appeared vertigo, intoxication, volubility, inco-ordination, occipital head-ache, nausea and either no change or slight increase in the pulse rate. These symptoms were at their height in about three hours after the dose, while slight vertigo and cephalalgia persisted during the second day.

These incidental effects seem to be very rarely exhibited, even after the largest therapeutic dose, and are proportionally not more frequent than with chloral or morphine.

THERAPEUTICS.

Chloralamid is successfully employed in con-

quering insomnia, and particularly that form denominated simple or idiopathic insomnia, not due to excitement or severe pain. It is, furthermore, possible for the wakeful patient to enjoy several nights of natural sleep after a single dose. The best results occur when the drug is used in insomnia due to nervousness, neurasthenia, hysteria, "spinal disease" or old age; next best when the causes are chronic alcoholism, alcohol excess, cardiac and bronchial asthma, pleuritis, phthisis, pericarditis, arterial sclerosis, organic heart disease, typhoid fever, gastritis, subacute nephritis, ascites, diabetes mellitus and in the morphine habit. It is less effective when wakefulness is due to tabes dorsalis, neuralgia, progressive paralysis, the excitement of insanity, cerebral softening with delirium, melancholia, chronic mania and acute mania. In these conditions, doses of from thirty to sixty grains are required, providing such doses are tolerated.

The drug is useless when the insomnia results from paralytic dementia, maniacal excitement or hallucinations, severe neuralgia or other pain, violent cough, distressing headache, delirium of cerebral apoplexy and from delirium tremens.

Even pain, when not acute, is often relieved, and the large doses necessiated are, by many patients, preferred to morphine. Chloralamid, in doses of from twenty to sixty grains, has checked the pains of thoracic aneurism, carcinoma of the stomach and liver, sarcoma of a rib, erysipelas, rheumatic fever, floating kidney, neuralgia, gallstone, varicose ulcer and alcoholic neuris.

In chorea, a boy of eleven years of age was cured in five days by fifteen grains of the drug three times daily, and in like manner, a girl, after receiving no benefit from other forms of treatment, was afforded relief in eight days.

When administered in phthisis it was found that the troublesome night sweats disappeared.—Chas. H. Steele, A.M., M.D., in *Pacific Med. Jour.*

CIRCUMCISION.—In the *Archives of Surgery* Mr. Jonathan Hutchinson sums up his experience in regard to the sanitary advantages of the rite of circumcision. After premising that it is not needful to go on a search for any recondite motive for the origin of the practice, he says: "No one who has seen the superior cleanliness of a Hebrew penis can have avoided a very strong impression in favor of the removal of the foreskin. If not removed it constitutes a harbor for filth, and is, in many persons, a constant source of irritation. It conduces to masturbation and adds to the difficulties of sexual continence. It increases the risk of syphilis in early life and of cancer in the aged. I have never seen cancer of the penis in a Jew, and chancres are rare."—*N. Y. Med. Jour.*

THE PROGNOSIS OF INFANTILE PARALYSIS.—An opinion respecting the duration of the paralysis or permanent condition in anterior polio-myelitis cannot be given until the end of the first week or ten days, and then *only* by means of an *electrical examination.* Whatever muscles, at the end of that time, have lost faradac irritability, will certainly waste and remain for a long time paralyzed. On the other hand, if there is no loss of irritability at the end of the ten days, but it is apparent at the end of a fortnight or three weeks, the wasting will be slighter in degree, and considerable ultimate recovery may be confidently looked for even in the most affected part. Where there is no loss of irritability, the paralysis will pass away in the course of a few weeks, or at most, of a few months. Where irritability is lost tardily, there will be wasting and paralysis for several months. Where irritability is lost early, the wasting will be rapid and great, the paralysis will last for one or several years, and it is unlikely that perfect recovery will take place.

In the chronic stage the prospect of ultimate recovery depends on the rate which the wasting develops, on the *electrical reaction,* and on the duration of the case. Where the wasting is great and has been rapid, and the faradic irritability is entirely absent, although some recovery may occur, it is not likely to be complete, and if this condition exists a year after the onset it is improbable that more than very slight improvement will occur. On the other hand, if, at the end of one or two months, some faradic irritability can still be detected, although low in degree (*i. e.*, elicited only by a strong current), considerable improvement is probable, and actual recovery is possible at the and of six or eight months.—W. R. Gowers, in *Pacific Med. Jour.*

THE MICROBES OF PNEUMONIA.—"Dr. Queisner has examined the lungs of a number of children and adults dying from pneumonia, his results showing that the pneumonia coccus of Frankel and Weichselbaum is the usual bacterial cause of true croupus pneumonia. This coccus was also found in the majority of cases of broncho-pneumonia. In both children and grown-up people the sputum contained the coccus at the very commencement of the lung affection, and its existence appeared to form a very good sign of the invasion of pneumonia of one kind or another. In the lungs of ten children who had died of various forms of pneumonia, primary as well as secondary to measles, diphtheria, and tuberculosis, Friedlander's pneumonia bacillus was not once found, but the coccus was found in eight cases. In several instances it was impossible to distinguish between the catarrhal and the croupous form, as even in undoubted catarrhal cases a very perceptible quantity of fibrinous exudation was found."—*Lancet.*

TUBERCULOSIS, SCROFULA AND LUPUS.—Dr. Lingard has made some important experiments for the medical department of the Local Government Board, as to the relationship of tuberculosis, scrofula and lupus. Koch, as is well known, has stated that the bacillus tuberculosis is present in all three, but the incontestable clinical differences seemed to many to detract from the value of his observations. Dr. Lingard has, as it seems to me, pretty conclusively proved that the clinical diversity is due, in part at least, to a difference in the virulence of the bacillus. Arloing had advanced evidence in this direction some years ago, but his results were controverted. Dr. Lingard finds in guinea pigs, that subcutaneous inoculation of tuberculosis material leads to the death of the animal from general tuberculosis in about 80 days; inoculation, with scrofulous material, has the same result in about 200 days, and with lupus material in 330 days. Further, he has found that animals inoculated in series, die at progressively shorter intervals. Taking all his experiments together, he obtained the following averages: Guinea pigs A, inoculated with scrofulous material (caseous glands or cold abscess), died of general tuberculosis in 206.3 days; guinea pigs B, inoculated from A's, died of general tuberculous in 131 days; guinea pigs C, inoculated from B's, died of general tuberculosis in 79.5 days, and guinea pigs D, inoculated from C's, died of general tuberculosis in 60.1 days. A considerable agitation is on foot at present with regard to the propriety of permitting the sale of the flesh of animals affected with tuberculosis in any form. The question of compensation to breeders and butchers constitutes the main difficulty, and there is considerable difference of opinion among sanitary experts; the more thorough-going maintain that tubercle anywhere ought to lead to the condemnation of the whole carcass, while others hold that a slight amount of tubercle, affecting only the lungs, pleura, or other viscera, ought not to prevent the flesh being passed. Except to the eaters of very underdone beef, the matter is not one of first-rate importance; but it is altogether different with regard to milk, and it is probable that power will be obtained by sanitary boards to forbid the sale of milk from cows suffering from tuberculosis in any form, but especially, and above all, from mammitis.—*Correspondent Occidental Medical Times.*

GLANDULAR TUMORS OF THE NECK.—Dr. J. W. White (*Therapeutic Gazette*) says:

1. Lymphatic enlargements, situated in the neck and dependant on constitutional causes, may arise from syphilis, carcinomia, and lymphadenoma.

When from *syphilis*, they affect by preference the posterior chain of glands, are small, freely movable, painless, bilateral, and yield readily to specific treatment.

If *carcinomatous*, they form a very hard, rapidly-growing mass, infiltrating surrounding parts, becoming fixed to every thing beneath it, involving the skin, causing serious pressure symptoms, and followed by the development of cachexia. Operative treatment is useful, though only palliative.

If *lymphadenomatous*, they are rounded, regular, movable, painless, elastic or fluctuating, do not affect the skin, and are associated with anæmia, leucocythæmia, and with enlargement of other and widely removed lympathatics and of the spleen. The treatment should be tonic and supporting. Operative interference is useless.

2. *Scrofulous adenitis* is essentially a tubercular inflammation of glands, occurring usually in young persons with a scrofulous or phthisical-family history, and with some form of local irritation superadded, which must be sought for in the mouth or pharynx or about the face or head. The glands are all characterized by a tendency to caseation, with or without suppuration, and from indolent masses, less defined, more fixed, and more tender than in lymphadenoma. The treatment in recent cases should be first hygienic and tonic with fixation of the head, and, if possible, with cure of the proximate cause. If this fails, or without attempting it in old cases, excision should be resorted to.

3. *Simple adenitis* results from some source of local irritation, and constitutes an acute, tender, inflamed, poorly defined swelling, running a rapid course to either suppuration or resolution. Treatment should consist in removal of the cause and in the application of resolvent lotions or ointments, or, later, in the free evacuation of pus.—*Am. Lancet.*

PARACENTESIS IN INTERNAL HYDROCEPHALUS.—The author exhibited a case of acquired chronic internal hydrocephalus, for the relief of which he undertook paracentesis after trephining. The patient was a boy nearly five years old. He was seized with convulsions when three months old, and these attacks, which became very frequent, continued for nine months and then ceased. Three months after their commencement his head became enlarged. Every form of treatment had been tried, but without the least success.

Condition at the time of operation as follows: He was obviously imbecile; he could not talk, but smiled idiotically; he was totally blind; the other special senses were not apparently affected. He had never walked or stood alone, but could easily move his body and extremities. His bowel and bladder sphincters were not controlled. He was extremely irritable and restless. He was fairly developed physically, but always of an ashy pallor. There was a very frequent rotary movement of the head, with slight retraction and grinding of the teeth.

The anterior fontanelle closed when he was eighteen months old, and the sutures had ossified at the usual time. The measurements of the head gave twelve and one-half inches from the glabella to inion; thirteen and three-quarters inches over the biauricular line; twenty inches around the fronto-occipital line. On the 4th of December, 1888, the author operated upon the case. Under the most careful antiseptic precautions, with a trephine about one centimetre in diameter, a button of bone was removed from over the coronal suture, about one and one-half inches to the right of the median line. A very delicate trocar was passed through the dural membrane into the brain-substance, downward, backward, and inward, to the depth of one and one-half inches, the object being to pierce the central cavity of the right lateral ventricle. About an ounce of a clear limpid fluid, closely resembling cerebrospinal fluid, was evacuated, and, as the trocar was withdrawn, a small quantity of the same kind of fluid escaped from the subdural space. For several days the same fluid continued to ooze from the puncture in the dura, and it was estimated that from four to eight ounces was thus discharged.

The case progressed satisfactorily. In two or three days he could stand alone, and he was gradually able to walk alone across the room, which he did in about three weeks. There was a partial restoration of sight. He became more attentive and seemed to understand better. He was less irritable and he slept well. The rotary movements of the head ceased. However, there was no development of speech, nor were the sphincters under any better control. The author believes that more fluid will have to be evacuated, as the patient is not quite so active now as some time after the tapping.

The chief difficulty lies in our inability to determine which cavity to evacuate. For instance, if the fluid resides in both cavities, and the normal openings between them, through the foramen of Majendie, and those behind the roots of the glosso-pharyngeal nerves be closed by inflammatory exudation, or the presence of a tumor, then to tap only the subdural space would remove the external pressure, and allow such an expansion of the internal fluid as would perhaps lacerate the brain-tissue. Or the same effect might be produced by evacuating only the ventricular fluid. This may have been the cause of death in some of the reported cases.—Dr. Ayers in *Am. Lancet.*

Cystitis. — One of the commonest ailments among women which the general practitioner is called upon to treat, and which seems to be peculiarly prevalent in this class of patients, is a troublesome cystitis, due possibly to derangements of the pelvic circulation. Not rarely a very considerable amount of difficulty is experienced in overcoming the affection, which not only disturbs the rest of the sufferer, but often also very seriously affects her mental state, causing her to be irritable, nervous, and a source of discomfort to all around her. For the treatment of such cases, resort has been had to innumerable remedies, and success has been claimed in this connection for the most dissimilar drugs and methods. Most frequently the cause of the distress is a vesical catarrh, the cure of which affords more or less complete relief of the condition. At otber times the treatment which is found to be called for is constitutional rather than local; and cases are also met with that necessitate a union of both procedures. To this probably it is attributable that the recommendations of different practitioners cover so wide a range of ground; while it explains, too, the reputed success of those who claim to have met with good results from the employment of medicines newly introduced into the Pharmacopœia. The drug most lately reported as being curative of the form of cystitis in question is salol; and three obstinate cases which were completely cured by its administration are described by Dr. Abbot in the *Boston Medical and Surgical Journal.* Each of the patients had been suffering for a considerable time, and had been treated with palliative means with more or less success, but without any permanent relief being obtained. The dose of salol given was ten grains three times a day, and in each, marked improvement of the symptoms was very speedily observed. One most satisfactory feature in the history is the rapidity with which the cure was effected, a week or ten days sufficing to bring it about in all three instances. When we remember that even months of treatment by other means may terminate in disappointment, it may well be considered that a method which promises so favorably deserves the widest possible trial, and no doubt the usefulness of the drug in question will soon be tested on a larger scale than has hitherto been the case.—*Medical Press.*

Not long since, while reading a history of "provings" of Nux Vomica, we learned that the patient was despondent and buoyant alternately, and that he had a desire to talk about his condition. Constipation, and an occasional sticking pain in the right ear, and a sensitiveness of strong odors were also noticed. He had pimples on his chin, and his dreams were full of bustle and anxiety. On going upstairs he was anxious to get to the top. As we had previously observed that the same symptoms followed the use of pumpkin pie, with the exception that the patient tripped up on a dust pan on the last stair when going down, it occurred to us that pumpkin pie should be added to the pharmacopœia.—*New England Medical Monthly.*

THE NEW METHODS OF TREATMENT IN ERYSIPELAS.—1. *Method of Rosenbach:* Consists in first washing with soap not only the affected part, but the surrounding healthy skin, then applying, each day, a solution of carbolic acid (5 per cent.) dissolved in absolute alcohol. Results, very brilliant as regards both the progress of the malady and the febrile phenomena. The use of absolute alcohol by itself has also produced favorable results.

2. *Method of Nolti:* The affected parts and surrounding skin are covered twice daily with mucilage of gum arabic, mixed with from 3 to 5 per per cent. of carbolic acid. Good results.

Dr. Ebstein mixes the carbolic acid with vaseline.

3. *Method of Koch:* By means of a soft brush, we apply a thin and regular covering of the following pomade:

℞—Creoline, ... 1 gramme.
Iodoform, ... 4 "
Lanoline, ... 10 "

The parts are then covered with leaves of guttapercha. This has given good results, especially in erysipelas of the face and head.

4. *Method of Nusstaum and Brunn:* Ichthyol with or without collodium. Results favorable and very prompt.

5. *Method of Hallopeau:* A solution of 1 to 20 of salicylate of soda is soaked in a mask of several thicknesses of linen and applied over the parts, after which it is covered with rubber bands, to prevent evaporation. Relief almost immediate; cure in from three to five days.

6. *Method of Hueter:* Injections of carbolic acid in the healthy skin, in doses of from ten to fifteen grammes, distributed in several punctures, at one or two centimetres from the edges of the affected parts, with the following solution, recently prepared:

℞—Carbolic acid (pure),
Absolute alcohol, . . āā 3 grammes.
Distilled water, . . . 94 "

Very painful. Only applicable in severe cases of the head or face.

7. *Method of Kraske:* Scarify the edges before the application of the antiseptic substance.

Dr. Lawenstein advises that the incisions should be made exclusively in the healthy skin, after which the parts are enveloped with a solution of carbolic acid or sublimate.

8. *Method of Wolfler:* Mechanical compression by means of adhesive plaster applied on the healthy skin on the borders of the affected parts, so as to completely surround them.—*Le Bulletin Médical.*

A STRONG solution of soap and water, taken immediately, is an excellent antidote to poisoning by carbolic acid.

DIGESTIVE DISORDERS IN CHILDREN.—Moncorvo (*Arch. f. Kinde*, xi, 5 and 6), concludes a paper with the following propositions:

1. Disorders of digestion in children are very common in Brazil.

2. The high temperature of tropical climates during the long summer tends to the frequent development of gastric disorders, and this may be more or less influenced by the excessive sweating which the heat insures.

3. Gastro-intestinal diseases often co-exist with dilatation of the stomach in children more than two years of age.

4. In children under two years of age defective gastric digestion is usually caused by diminution or absence of free hydrochloric acid in the gastric juice.

5. In the subsequent years of life cases sometimes occur in which there is excess of acid in the stomach, but, as a rule, there is a deficiency, or a want of it, in dyspeptic children.

6. The remedy for deficiency in the supply of acid in the gastric juice, consists in the proper use of hydrochloric acid.—*Amer. Jour. of Med. Sciences*, Aug., 1890.

FLUSHING THE BLADDER WITHOUT A CATHETER.—Staff-Surgeon Rotter, of Munich, recommends the following process of flushing the male bladder, which obviates the introduction of a catheter, and makes it impossible to introduce septic matter into the bladder. An irrigator, filled with a quart of some disinfecting, and perhaps slightly astringent, liquid, at a temperature of from about 82.5° to 86° F., having a tube six feet or more in length, with a perforated and somewhat pointed end—which, according to the size of the meatus, is covered with more or less gauze previously saturated with the disinfecting fluid and greased with antiseptic vaseline—is used. For patients with a very small meatus a thin, gutta-percha drainage-tube a few inches in length is attached to the end of the tube, which is exhausted, and then completely filled with the warm fluid. The patient is told to micturate, if possible, and then to lie on his back, with his legs a little drawn up and his pelvis supported. The end of the tube is then introduced into the urethra to the depth of about an inch, and there held by the physician, who continually presses the glans against the tube. The irrigator is then raised, first three feet high, and then six feet, and in from half a minute to two minutes, or, in patients with a very strong sphincter, in three or three and a half minutes, the liquid begins to flow into the bladder. The amount used is easily determined if the irrigator is made of glass; or, if not, by the vibration that is communicated to the copora cavernosa. If it is intended to fill the bladder completely, percussion, the appearance of the bladder above the symphysis, and, in many cases, the patient's sudden desire to micturate, will give the necessary information.—*Lancet.*

STROPHANIN.—Strophanthus now holds a recognized and valuable place among the remedies used in the treatment of cardiac complaints, being perhaps only secondary to digitalis. An interesting article was read at the Medical Congress held in Vienna in April last, by Rothziegel, on the active principle of strophanthus, namely strophanin. An abstract of the paper is published in the *Centralblatt für Klinische Medicin*, 1890, No. 27. The doses given were 0.0002 to 0.0003 gram, amounting to $1\frac{1}{2}$ to 5 milligrams *per diem*. In English measure this would amount to about $\frac{1}{300}$ to $\frac{1}{200}$ of a grain for a dose. It is best given in capsules, and repeated every two hours. Rothsiegel sums up his results thus: (1) The circulation was in most cases greatly improved, the pulse became stronger and more regular, a difference being sometimes noticed in from five to ten minutes after the first administration of the drug, but the full effect upon the pulse was not attained until the second or third day of its use. The improvement occurred later than with digitalis; but if the strophanin were continued its beneficial effects were more lasting, and persisted for some time after the drug had been discontinued. (2) The dyspnœa, palpitation, and other symptoms occurring in organic disease of the heart were much relieved while the patient was taking this drug. As a rule, the dyspnœa disappeared before the palpitation. In cases of so-called "nervous palpitation," strophanin produced some relief, but this was only temporary. (3) The amount of urine secreted was increased, but not until the strophanin had been taken for some considerable period, and, moreover, the quantity passed was not so large as when digitalis or the tincture of strophanthus had been given. The increase in quantity of urine lasted for several days after the strophanin had been discontinued, and was apparently due to increased blood-pressure, and not to any direct action on the kidney. No sign of kidney irritation was noticed at any time. (4) Gastric disturbances even after prolonged use of the drug, were very rare, and even when such phenomena did appear strophanin could be taken in capsules without any discomfort. As a general rule, the appetite was increased. The condition of the stools was not altered. There was no diaphoretic action. (5) The nervous system was only influenced indirectly, and that favorably, owing to the improved strength and regularity of the heart's action. (6) An accumulative action was not noticed in the case of strophanin, and the drug may be continued for weeks without any ill effects. (7) Subcutaneous injections ($\frac{1}{120}$ grain in watery solution), in cases where the heart's action was very weak, produced a rapid and lasting effect on the pulse, and no unpleasant local effects were caused by the puncture. (8) With the tincture of strophanthus, strophanin compared unfavorably. The tincture acted more certainly, quickly, and energetically than the alkaloid; this was especially noticed in its diuretic action. Cases, however, occasionally occurred in which not only the tincture of strophanthus and digitalis, but also the other cardiac tonics, could not be taken, but in which strophanin was well borne, and the latter was found to be a good substitute for the tincture in such cases. Other instances were also noted in which all the cardiac tonics were ineffectual, while the administration of strophanin was followed by satisfactory results. (9) The indications for the use of strophanin in valvular disease, with orwithout affection of the myocardium, are the same as in the use of digitalis; that is to say, when there are indications of heart failure. In acute and chronic Bright's disease strophanin produces diuresis, especially if the heart's action is at all weak.—*Lancet.*

THUNDER AND SOUR MILK.—The effect of thunderstorms in turning milk sour is a matter of constant observation in every household. It is not certainly known to what element in the air this souring action on milk is to be directly attributed, and most people are content to ascribe it to "electricity in the air." An Italian *savant*, Professor G. Tolomei, has lately made some experiments with the view of elucidating this question. He found that the passage of an electric current directly through the milk not only did not hasten, but actually delayed acidulation, milk so treated not becoming sour until from the sixth to the ninth day, whereas milk not so electrified became remarkedly acid on the third day. When, however, the surface of a quantity of milk was brought close under the two balls of a Holtz machine the milk soon became sour, and this effect he attributes to the ozone generated, for when the discharge was silent the milk soured with greater rapidity than when the discharge was explosive, in the former case more ozone being formed than in the latter. The souring of milk is generally attributed to the growth of a ferment (bacterium), which converts the milk sugar into lactic acid. It is possible, then, that the presence of ozone in the air overlying the milk hastens the growth and multiplication of the bacterium. The first observation—namely, the retardation of souring by the passage of a current through the milk—may be a point of practical importance to milk traders. Any methods of preserving milk from its first retrogressive changes, which does not involve the addition of extraneous substances (antiseptics) to the milk, and which is at the same time cheap, effective, and not likely to prove injurious to the consumer, is sure to be welcomed at a time when milk is sent long distances to market, and is often stored for a considerable time before it reaches the consumer.—*Brit. Med. Jour.*

THE CANADA LANCET.

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MEDICAL EDUCATION.

We are firmly of the opinion the time has arrived when a sharp line of differentiation must be drawn between the so-called natural sciences and medical science, and any attempt to substitute comparative anatomy for human anatomy, zoology for physiology, and physics for medicine, cannot but fail in qualifying a student for practice as a physician. It may and doubtless does sevre in some instances as material for display on opening occasions, and serves the purpose of impressing freshmen, and catching the unwary; but the requirements of after years will speedily prove to such that the position of the liver of the frog is no guide to its position in man, that the pyrexial state in the two are by no means the same in their results or tendencies. There are those who think the medical student should devote several years to the study of the natural sciences before coming near a human subject, so that his mind might be the better qualified to battle with the scientific theories of medicine.

Unfortunately the medical students in Canada choose the profession of medicine as a means of livelihood, and not as a mere pastime, and they can hardly afford the time to devote four years to the study of natural science, and three years afterwards to the requirements of the medical curiculum, and after their student days during the time they are struggling to secure a practice, find themselves surpassed in usefulness on every hand by those who have devoted their extra time to acquiring that education and experience for the practice of medicine, which the largest hospitals in Europe supply.

We would like to ask of anyone, who has any experience as to the requirements of a practical physician, whether that student would be best qualified for his life work, who had spent three or four years in the study of chemistry, biology, botany and physics, or the one who having a taste for the practical in his profession, spends three or four years in a large European hospital in daily contact with disease, and learning, in the most direct and practical manner, the methods of relieving pain and suffering. And yet we as physicians allow ourselves to be told by those who neither know nor care what the requirements for a doctor are, that if biology be taught, there will be no need of our students going from the province of Ontario to Montreal, and from the Dominion of Canada to Buffalo, to perfect their medical education, but everyone knows, that the best students of medicine, and the best practitioners do go abroad, not to Buffalo and Montreal, but to New York and Europe, to see practice, to recover the time lost by them in studying the habits, characters and conditions of the bats, owls and moles who for so long forced them to sit blinking over obtuse scientific problems. Among the numbers of medical practitioners, and medical students who every year find it necessary to go to the large hospitals and medical centres abroad, how many go or have ever gone to study biology?

Upon this matter the remarks of Dr Lawson Tait, in his recent address at Birmingham, are as follows:

"Still more strenuously I appeal that our student be altogether relieved from that senseless system of biological training which has set in as a fashion at Cambridge, at Oxford, and at Edinburgh. Not many years ago I attended a lecture on physiology given to medical students, which consisted in an explanation of a brass instrument resembling a model of Clapham Junction, intended to explain something about muscular fibre. I could not understand it, of course, I was too much of an old fogey, but I had this consolation, that when talking over it with my young friends who had attended the lecture with me, they could make nothing of it either, and it worried them as much us it had worried me. But there was a difference between us—it was demoralizing to them, for it discouraged them, and small wonder! And how angry they must feel when they come to deal with human patients and human disease, that all these nonsensical details are of no use to them—not even for the purpose of general training—when they find in truth, that the time occupied in mastering such

subjects has been absolutely thrown away. For students who are disposed to appear for a science tripos, or who have such a line of life open for them, or the tendency towards it, who are possible professors of anatomy or biology, this kind of work is of course admirable; but of our medical students, nine hundred and ninety-nine out of every thousand will have to find their positions at the bedsides of their fellow countrymen in times of accident and sickness, and there such knowledge is useless.

"In the old days—days which I can remember—it was charged against the corporations that they turned out a large number of ill-educated empirical practitioners who knew nothing but their patients. Now I say the tendency is to turn out a still larger number, a very much larger number, of scientific young tyros, who know neither patients nor their diseases till they have gone through a second pupilage extending for years after they have left their university. This second pupilage lies in the rough school of experience, and in its second training they will be found deliberately and at once to throw overboard at least two-thirds of what they have learned in the first. What the boy wants after his general education has been fully developed, and his fundamental knowledge of useful anatomical facts and physiological principles has been made perfect to the utmost of their extent for usefulness, and not one scrap beyond that, is that he should be dealt with as we deal with the cutter of blanks in the button manufactory. He should be put at once into contact with his material. I therefore vote cordially with those who demand the restoration of the apprenticeship system in such fashion as modern requirements indicate. It is, of course, no longer to be a seven years' slavery in mixing pills and spreading plasters, for the modern manufacturing chemist does all that for us now, but it should be a period of at least two years spent in learning how to deal with patients, how to divine their peculiarities, and in learning how to avoid making an ass of himself in the sick room as the modern, newly-fledged, qualified assistant is certain to do for the first few years of his second pupilage, in spite of his biological lore.

"The road to success in the practice of our art lies not only in knowing how to deal with disease, but how to deal with men and women while they suffer from it. Our biological practitioners have no experience of either of these lines of research, and they therefore fail miserably. I had to meet a most excellent and estimable practioner of the old school in the north of England some months ago, and he told me that within a year he had had three assistants, all Bachelors of Medicine and Masters of Surgery from one of our most flourishing biological schools. "Sir, would you believe it," he said to me, boiling with indignation as he thought of the needs of his large colliery practice, "not one of them could put on a splint! and the third was such an ass that he used to lecture a collier's wife on how fishes lost their eyes in coal pits instead of supporting her perineum." I am speaking from a lamentable fulness of similar experience, and I feel that no other remedy is possible than that which I recommend, and the sooner we begin to cry out for it the better. Our corporations are deaf to our appeals upon such subjects, because their rulers no more understand the requirements of the general practitioner than they understand the Confucian system of philosophy."

THE REPARATIVE PROCESS IN THE HEALING OF WOUNDS.

There seemed at one time to be almost a unanimity of opinion among the leading observers upon this question, when once Cohnheim's view of inflammation had recommended itself for general acceptance, as against Virchow's earlier theory of "attraction," or increased nutritive activity, or against the neuropathic theory held by Henle, Stilling, Lubbock and others. The origin of the fibro-blasts, which are the real agents in the *restitutio ad integrum* of an inflamed area, in which the lesion has gone on beyond the possibility of resolution, is now the disputed point. Virchow's theory, long ago advanced, that they originate from the injured but not killed connective and other tissues of the part, has been refused acceptance by observers since, and such authorities as Ziegler have been followed by most of the English text-books on pathology, with the theory that the fibro-blast originates only, or almost only, from the leucocyte. The old theory of Virchow, that the fibro-blast is not a modified leucocyte, but a proliferated connective tissue product, is taken up and defended with the utmost vigor by Hamilton, of Aberdeen, in his text-book on pathology lately issued, and a statement of his

views, since he seems to be the champion of the theory so far as English opinion goes, may not be uninteresting to the reader who has not time at his disposal for a perusal of the new text-book.

It is a fresh local manifestation of the same constitutional disease, the old sore broken out in a new spot, the quarrel between those pathologists who are willing to admit the entrance into their observations and calculations of some factors, other than those that can be explained on purely mechanical grounds, and that other school who seek to eliminate the existence of the mysterious *esse*, known as vitality, simply because they cannot explain it. Perhaps Bland Sutton may stand as the champion among English pathologists, of the non-mechanical school. His description of the defending army of leucocytes, each cell a soldier, always mobilized, hurrying, by the arterial railways, to "the front," the seat of injury, and there either perishing in "the imminent deadly breach," in mortal duel with the invading bacillus, or triumphantly ingesting the foe, as a cannibal might his vanquished enemy, has become classical.

By this school of thinkers, the individuality of the cell is strongly insisted on, and the leucocyte in particular almost spoken of as a separate organism, like the amœba. Metschnikoff, with his classical investigations upon the absorption by phagocytes of the tail and gills of the larval frog, was, perhaps, the apostle of this theory. The other school, of whose views, as already said, Hamilton, may be taken as the leading English representative, would be called by a theologian the more materialistic of the two. For instance, Hamilton so far robs the leucocyte of its active properties as to declare that diapedesis does not depend on a morbid motion, but is due chiefly to intravascular pressure, the cells escaping where the vessel wall is weakest, *i. e.*, through the cement substance between the endothelial plates. Or again, he teaches that the capillary tuft which forms the basis of granulation tissue, is not a new formation, but a morbid dilatation of a pre-existing capillary which can no longer resist the expulsive action of the heart upon the contained column of blood. A brief *resumé* of his whole account of the process of healing may be not uninteresting. He proceeds upon the old clinical division of the process, that of Sir James Paget, into five varieties: By immediate union; by first intention, or primary adhesion; by second intention, or granulation; by secondary adhesion, or union of two granulating surfaces; by scabbing. The five processes are found on investigation to be essentially the same, and healing by immediate union is the type, a clean cut, with pressure at once applied, no bleeding allowed, and no organismal contamination, therefore very little effused matter to be removed, and nothing to retard immediate healing by imposing the necessity of organization of a mass of new tissue, and absorption of exuded matter and blood-clot. In forty-eight hours each surface of cut will be seen to have thrown out a few new large soft round cells, proliferated from the connective tissue cells of the part, not from the wandering leucocytes, which co-exist, but are two or three times smaller. These new cells are fibro-blasts. They soon spindle out, and by change in protoplasm the caudate ends split into delicate fibrillæ, the nucleus persisting with perhaps a portion of the body of the spindle-cell as a connective tissue corpuscle, while the fibrillated portion is known hereafter as a bundle of white fibrous tissue.

(To be continued.)

THE VACANCY AT THE HEALTH OFFICE.

Since the issue of our last number we regret to have to record the resignation, in consequence of ill-health, of Dr. Canniff, who has held the position of Medical officer of Health for the past eight years.

Doubtless there will be a large number of applicants for the position and a great deal will depend on the co-operation of the profession in the selection of an officer, who, in all matters concerning infectious diseases and the public health, is placed in a position of authority. Realizing this fact, a meeting of the profession was called and a large and influential number of medical men met at the City Hall about a month ago, from whom a sub-committee of their number, consisting of Drs. Strange, Temple, White, Ross, Nesbitt, Ogden-Jones, Sheard, Burns and Britton were selected to meet a sub-committee of the Local Board of Health. His Worship the Mayor and Aldermen Verral, Gibbs and Graham were present at the joint meeting. The Medical Committee presented a series of resolutions, stating the qualifications for fitness in a Medical officer of Health and recommending

strongly the appointment of outsiders, other than aldermen, on the Local Board of Health. The Mayor was asked "whether it was in the scope of "the rules governing the Board for it to resign "and then the Council to elect new members, ad- "mitting outsiders. The reply was 'Yes,' and it "it is possible that such a course will be adopted. "The meeting broke up after the Mayor and Al- "men assuring the visitors that their suggestions "would receive the greatest attention."

We heartily endorse the opinion of the late medical officer, Dr. Canniff, in a letter to the *Medical Practitioner*, where he says:—"I can "assure the medical profession that, unless they "take strong action in this matter, their views "will continue to be ignored. Some aldermen do "not want an independent Board, nor perhaps an "independent Health officer." Bearing in mind the above facts, it behooves the members of the medical profession in this city to bestir themselves and see that their views, in regard to the appointment of such official, be respected and that "the "committee of medical gentlemen who are to be "appointed to examine into the credentials and "qualifications and report to the sub-committee "of the Local Board of Health the relative merits "of the candidates upon examination," be composed of men well versed in sanitary matters and determined to select the best applicant for the office.

A Rational Treatment of Sciatica.—For the relief of pain in very severe cases, says Hammond, in *N. Y. Med. Jour.*, it is absolutely necessary to use morphine. It should be injected hypodermically, as near the nerve as possible. In milder cases phenacetin, antipyrine or acetanilide might be used. To relieve the neuritis, dependence is placed almost entirely upon rest, the application of cold, and the use of electricity.

Absolute rest is attained by keeping the patient in bed and employing the old-fashioned long splint, reaching from the axilla to the sole of the foot. It should be attached so as to leave the thigh and sole uncovered for the use of electricity. The splint should be removed for a short time every fourth day, in order to manipulate the joints and muscles to a slight degree. Cold should be applied to the sciatic region by means of ice bags.

Electricity is very useful, and only the continuous current should be employed, and in the following manner:

The negative electrode should be nine by four inches in size and should be strapped to the sole of the foot. The positive electrode about five to six inches square should be applied over the glutial region, over the point of the exit from the pelvis of the sciatic nerve. If there are any tender points along the course of the nerve, this electrode should be changed occasionally, so as to cover them. The strength of the current should not be such as to cause much pain, but should fall short of this. The continuous current should be applied twice daily for about five minutes at each *seance*.

Relation of Tonsillitis to Rheumatism.—Dr. R. Hingston Fox (*Br. Med. Jour.*), says:—1. Evidence justifies us in associating together as allied diseases, the following group: Scarlatina, diphtheria, enteric fever, the forms of tonsillar inflammation, classed under epidemic sore throat, and simple tonsillitis, and, lastly, acute rheumatism. This might be styled the "lympho-rheumatic" group of diseases, having some of the following features in common: Acute lesions of the tonsil or of other lymphatic organs of the digestive tract, arthritis, inflammation of endocardium and pericardium, and of serous cavities. In all but rheumatism the course is fairly definite. It is common even in simple tonsillitis, to find some signs of a cardiac disturbance. The second sound is markedly accentuated, and both sounds are generally re-duplicated. 2. There are no grounds as yet upon which to base any hypothesis as to the morbid processes in this group of diseases. It is clear, however, that the lymphatic system with which the tonsils, ileo-cæcal glands, serous cavities, and perhaps the joints, are connected, is especially concerned. 3. Evidence does not at present justify the inclusion of true quinsy in this group of associated diseases.

Recovery from Traumatic Tetanus.—A. Holdrich Fisher, M. D., records a case (*Lancet*) of tetanus resulting from a wound in the forehead, the disease appearing on the eighth day after the accident. The symptoms came on in the usual way, and were characteristic. The patient was able to swallow at first, so was ordered nourishing fluids, ice

to the neck, a quiet and dark room and a mixture containing five minims of tincture of belladonna in a little water, every four hours. The case went on till a state of complete opisthotonos supervened with occasional spasmodic seizures, during which he became cyanotic. Nutrient enemata took the place of stomach feeding on account of the difficulty he now experienced in swallowing. The mixture was now changed to one consisting of ten minims of spt. sulphuric ether, three of chloroform, and three of tinct. digitalis in a drachm of water, with lin. belladonnæ to the spine. On the twelfth day he began to improve. This improvement continued till at the end of about a month and a half he was up and well. The writer thinks that pieces of grass fibre which had been left in the wound when first dressed by the lad's mother, and which were discharged at two separate times, were the potent factors in causing the mischief. The case is interesting as a recovery from a genuine case of tetanus, but how does the theory of the presence of grass fibre in the wound, accord with the now rather prevalent idea, that tetanus is a specific disease?

Sodium Salicylate in the Treatment of Chorea.—Dr. Dresch, in an article in the *Bulletin Général de Therap.*, speaks very highly of the action of salicylate of sodium in cases of chorea. He says the disease is of greater gravity than is generally supposed, and is not infrequently, directly or indirectly, the cause of death. He believes chorea is a microbial disease, the microorganism of which, is probably of the same family as that of rheumatism. Energetic treatment should be begun at the earliest possible moment. The drug is administered because of its action upon the medulla and cord, where it affects the motor centres as well as the sensory, and not because of any special action as a germicide or antirheumatic. Apart from the sedative action of this drug, it possesses another great advantage, in that it increases the elimination of waste products. As it is evident that the choreic movements must greatly augment the amount of waste products, it is of the utmost importance, that any remedy given for the disease should favor the elimination of these materials by the kidneys and other enunctories. The salicylate is well borne in most cases, a child of twelve years taking without trouble as much as sixty grains in twenty-four hours, the only precaution being to give the drug in small and frequently repeated doses, well diluted with slightly alkaline water. It is not usually necessary to continue the use of the drug more than eight or ten days. Rest in bed, a well-ventilated room, avoidance of noise, and a milk diet are all of assistance in promoting the beneficial action of the drug.

The Pasteur Institute at New York.—Dr. Paul Gibier, Director of the New York Pasteur Institute, sends us the following results of the preventive inoculations against hydrophobia, performed at the above Institute since its opening in February, 1890:—610 persons, having been bitten by dogs or cats, came to be treated. In the case of 480 of these persons it was demonstrated that the animals which attacked them were not mad. Consequently the patients were sent back after having had their wounds attended, during the proper length of time, when treatment was necessary. In 130 cases the anti-hydrophobic treatment was applied, hydrophobia having been demonstrated by veterinary examination of the animals which inflicted bites or by the inoculation in the laboratory, and in many cases by the death of some other persons or animals bitten by the same dogs. In every case the treatment was successful, all of the patients being at present in good health. The applicants were from twenty States and Territories and one from Ontario.

Iodoform Injections in the Treatment of Cold Abscess.—Dr. Jasinski, of Cracon (*Lancet*), has treated eighty-six cases of cold abscess by means of injections through a trocar of iodoform emulsion, with encouraging results. A certain number were cured by a single injection, others after two or three injections. In eleven cases after the injection the abscess broke, a large quantity of pus mixed with iodoform being discharged. These were all cured without any further surgical interference. In nineteen cases an incision had to be made, the cavity was then washed with carbolized water, iodoform emulsion injected, and the wound sewed up after a drainage-tube had been inserted. In some of these cases, the injection had to be repeated several times. Though 180 grammes of a ten per cent. emulsion were injected at once, no toxic symptoms were ever observed.

SALT IN MILK FOR CHILDREN.—Dr. A. Jacobi (*Arch. of Ped., Am. Jour. Med. Assoc.*) says that the addition of sodium chloride prevents the solid coagulation of milk by either rennet or gastric juice. The cow's milk ought never to be given without table salt, and the latter ought to be added to a woman's milk when it behaves like cow's milk in regard to solid curdling and consequent indigestibility. Habitual constipation of children is influenced beneficially, since not only is the food made more digestible, but the alimentary secretions, both serous and glandular, are made more effective by its presence.

FUNDAMENTAL FACTS.—A German doctor claims that any good soap containing not less than 25 % of glycerine will act as well in suppository form as the 95 % suppositories now so largely used. An Ontario *confrère* has been testing this matter somewhat and his observations lead him toward the opinion that the soap is 33 % slower in action than the solidified glycerine, while its fæcal dividend is notably less. *Per contra*, glycerine soap can be bought anywhere, is easily cut with a penknife, and will prove at times a convenient substitute for the more active, elegant and expensive suppositories.

FIFTY YEARS OF PRACTICE.—The medical fraternity of Montreal did a graceful act, in banqueting, on the 16th ult., the veteran Dr. D'Odet D'Orsonnens. The president was Dr. J. L. Leprochon, and Drs. Rodger and Desroches acted as joint secretaries. The banquet was a complete success. We congratulate the venerable Dr. D'Orsonnens in his having completed the fiftieth anniversary of his entry into the profession of medicine and wish him long life, health and happiness.

LAWSON TAIT has been evincing his iconoclastic tendencies rather more frequently than usual of late. He says of Emmet's operation on the cervix uteri, that it is one of the most useless ever introduced into surgical practice. He believes that the laceration is of the slightest, if of any, importance, and that the real evil is the subinvolution and consequent chronic metritris. There is enough of the ordinary, common, hen sense in his remarks to commend them to practitioners who are not gynecologists, whatever impression they may make upon the minds of specialists.

BILIARY CALCULUS.—Dr. Fisher, of Philadelphia, reports (*Med. Mirror*) a case of gall stones successfully treated by large doses of olive oil. During an attack he gave a half pound of olive oil, and one hour later another half-pound. Three hours after taking the last dose, a stone as large as the last phalanx of the thumb came away. A week later another attack was treated similarly and with a like result.

SYRUP OF HYDRIODIC ACID.—H. M. Field, M. D. (*Med. Mirror*), in an interesting paper says that hydriodic acid should be given on an empty stomach or not at all; and recommends its use in the more chronic conditions of asthma, bronchial or pulmonary catarrh, and chronic accumulations of serous fluid. It should be kept from the light and not exposed long to the air, and at a medium temperature between 32° and 100° Fahr.

CHRONIC PHARYNGITIS.—The following is said to be a good application :

℞—Ergotine, ... gr. xv.
Tr. Iodine . . . . . ʒ j.
Glycerine . . . . . ℥ j.—M.

Sig.—Apply three times a day with a camel's hair pencil.

EMETIC FOR CHILDREN.—Dr. John Brown, England, says :—Apomorphine is "the emetic *par excellence* for children, when given hypodermically." He prepares his solution as follows :—

℞—Apomorphia mur. . . . . 1 gr.
Sp. vini. rect. . . . . 20 min.
Aquæ . . . . . 110 min.

Each ten minums equals one-twelfth of a grain of the alkaloid. The dose for hypodermic injection varies from two to ten minims according to age.

BURNS.—As an application for burns, the following is recommended :

℞—Salol, ... gram 1.
Ol. olivæ,
Aq. calcis, ... āā grams 70.

M. Sig.—Apply on cloths.

Or.

℞—Tannin, ... gr. xv.
Alcohol, ... ♏ xv.
Aitheri, ... ʒ jss.—M.

Sig.—Apply : repeat two or three times a day.

TREATMENT OF PALMAR ABSCESS.—Dr. Spiers, of Edinburgh, O., writing to the Cincinnati *Lancet-Clinic*, draws attention to the good results obtainable by the seton in abscess beneath the palmar fascia. He says: In my experience poultices and fomentations amount to but little. In the use of the lance, whether early or late, parts are severed that never again unite; the hand is left disabled as a consequence. If the abscess be allowed to remain unopened, the pus burrows into, or so paralyzes the muscles of the hand, that its use is ever after limited. In either case a claw hand is the result.

I have seen a number of cases and have closely observed the results of treatment. To me no method has proved so satisfactory as the following: Pass a large needle, with a curved point carrying a double thread of surgeon's silk, near or into the annular ligament, well into the tumor and let it emerge between two of the fingers—preferably the ring and middle. The operation is brief, the pain little; but an anæsthetic may be used, or a hypodermic injection of morphia or cocaine may be given if preferred. The double thread is left long, and is knotted at both ends. By alternately pulling the thread backward and forward any pus along the line readily makes its exit. The parts gradually settle back to their wonted place, and recovery is complete. This operation has the merit that it may be used early or late. Of course, it will not retrieve any damage already done. I have frequently resorted to this method in tumors of the face and neck, where it is dangerous to lance or where a scar is not desired, usually with good results.

NUTRITIVE ENEMA. — M. Jaccond's nutritive enema (*Jour. Am. Med. Assoc.*) is made as follows:

℞—Beef broth (freshly made), . ℥ viij.
Wine, ... ℥ iv.
Yolks of eggs, ... ij.
Dry pepton, ... ʒ j.-iv.—M.

Sig.—Mix and make an enema, to be injected in small portions at intervals during the day.

THE URINE OF OPIUM HABITUÉS.—Dr. J. B. Mattison, of the Brooklyn Home for Habitués, writes to us (*N. Y. Med. Jour.*) concerning a statement that he has met with in contemporary periodical medical literature, to the effect that the addition of tincture of chloride of iron to the urine of a subject of the opium habit will produce a blue tint showing the presence of morphine. Dr. Mattlson declares that this statement is not true.

FLATULENT DYSPEPSIA (*Med. Review*) is treated by Huchard as follows:

℞—Aq. chloroformi, ... ℥ x.
Aq. dest., ... ℥ viij.
Aq. menthæ pip., ... ℥ ij.—M.
Sig.—ʒ j. before or after meals.

Or,

℞—Tr. gentianæ,
Tr. valer.,
Tr. nucis vom., ... āā ʒ j.
Chloroformi, ... gtt. xx-xl.

M. Ft. Sig.—10 to 20 drops in a little water, fifteen minutes before a meal.

If an antiseptic action is required, we prescribe:

℞—Beta naphthol,
Bismuth salicyl.,
Magnesiæ, ... āā ℈ iv.—M.

Ft. pulv. No. 30. Sig.—One powder before each meal.

SEMINAL EMISSIONS.—As a direct means of diminishing the frequency of nocturnal emissions, Bumstead recommends:

℞—Potassii bromidi, ... ℥ j.
Tr. ferri chlor., ... ℥ j.
Aquæ pur., ... ℥ iij.

M. Sig.—One or two teaspoonfuls in water an hour after meals and at bed time.

SOLVENT FOR DIPHTHERIC MEMBRANE.—

℞—Pepsinæ, ... ʒ jss.
Ac. hydrochlor. dil., . . . ♏ j.
Aq. dest.,
Glycerinæ, ... āā ℥ ss.—M.
Sig.—Paint.

INFANTILE DIARRHŒA.—

℞—Ferri sulph.,
Sod. salicyl., ... āā gr. x.
Glycerinii, ... ʒ iij.
Aq. dest., ... ℥ ijss.—M.

Sig.—A teaspoonful every one, two, or three hours.

Books and Pamphlets.

THE THROAT AND NOSE AND THEIR DISEASES. By Lennox Brown, F.R.C.S.E. Third edition, revised and enlarged. Philadelphia: Lea Bros. & Co. Toronto: Vannevar & Co. 1890.

If asked, "What principles guide you in the selection of medical books for purchase?" how many in our profession could give satisfactory answers? The text-book that has stuck to us from student days, and the subscription work forced upon us by glib-tongued agents, with bound and unbound journals, make up the great bulk of what is to be found upon our library shelves. Do these, in a satisfactory manner, supply the needs of general practitioners called upon to meet and to treat every variety of human ailment? If they do not, what better plan for selection and purchase can be suggested?

Many years ago, the writer made a resolution thereafter to buy only monographs, and by comparison, to find out, before purchasing, what particular one most helpfully and fully presented existing knowledge on its subject.

To Pepper and to Ashurst we are under obligation for our very best collections of monographs, but each of us needs to have at hand a special work, for example, on the eye, the ear, the nose, on operative surgery, on electro-therapeutics, etc. Well and carefully choosing these, a physician can make their cost his very best investment. No one of us can afford to waste time over books that are barred from being helpful by the statute of limitations.

In the work before us, we have an excellent example of just what a monograph should be. Its artist-author, with pencil and pen, has made this third edition practically a new book, and has incorporated in it the results of the best work done in his specialty up to the present year. He is less insular than English writers on medicine are, as a class, and has drawn freely from continental and American sources to perfect his descriptions and methods.

In this, he has not been more than fair, since America is the natural home of nasal catarrh, and in the nasal cavities we now know we have to look for the point of departure of most faucial, pharyngeal and laryngeal diseases. A very timely warning is given by the author in regard to the routine, or careless prescription of cocaine preparations for the relief of slight symptoms.

The plates are admirably drawn, and even if, at times, over-colored, are far and away the best helps of the kind which we have.

In the illustrations and letter press the bookmaker's art is seen to good advantage, while paper and binding are up to the publisher's well-known high standard.

THE SCIENCE AND ART OF OBSTETRICS. By Theophilus Parvin, M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children in Jefferson Medical College, etc. Second edition, revised and enlarged; two hundred and thirty-nine wood cuts, and a colored plate; pp. 704. Philadelphia: Lea Bros. & Co. Toronto: Carveth & Co. 1890.

In this, the second edition of his excellent book, Dr. Parvin has brought the subject of midwifery up to the latest date. All important information to be had on the subject will be found within its pages, well arranged and lucidly put. The book is a useful one, both for students and practitioners, and will, we have no doubt, take its place among the classical literature of the day. The illustrations are of the best, and the letter press everything that could be desired. We can commend the book as one of the best in existence on the subject.

QUIZ-COMPOUNDS, EQUINE ANATOMY AND PHYSIOLOGY. By Wm. R. Ballou, M.D., Professor of Equine Anatomy, New York College of Veterinary Surgeons; Instructor in Genito-Urinary Surgery, New York Polyclinic, etc., etc. Twenty-nine illustrations. Philadelphia: P. Blakiston Son & Co. Toronto: Vannevar & Co. 1890; pp. 205.

A useful little book for veterinary students, and others interested in equine anatomy and physiology. The scope of the book is similar to the others of the series, of which this is No. 12. All important facts are put down in condensed and easily getatable shape.