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THE ALIMENTARY CANAL AND HUMAN DECAY IN  
RELATION TO THE NEURONS.<sup>1</sup>

BY

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Death is a complex problem. In the varied stages of growth in the human system, we trace frequent indications of decay. At an early age, the hair bulb dies, the hair drops out, and disappears. In the same way, teeth decay, and the masticatory process is being rapidly accomplished, more by artificial than natural grinders. Such evidences of lessened vitality, are not confined to these tissues alone. Nerves and nerve centres participate readily. No part of the human system is attracting closer or more careful observation than nerve tissue and the part it plays in the promotion of the vital spark, so essential to every act of life. The brain is the great battery, plastic, pliant, thought producing, and having as its matrix, cells, which communicate with the cells (nervous) in all parts of the human frame. This linking of cell agency is all important, any interruption to such connection being at once marked by functional inactivity. Recent discoveries, in the line of nerve tissue formation, have defined small cellular, almost rod shaped bodies, as component parts of cell nervous tissue, *known as neurons*, which doubtless play an exceedingly important part, as to the elimination of normal nerve power, without which, no positively healthy function can be established. For some time, my attention has been directed towards a study of the alimentary canal, so peculiarly constituted. Into this canal, from the mouth to the anus, are poured the secretions of the various glands, outside and inside of which, is more than a life's study. Sanitary science is mak-

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<sup>1</sup> Read before the Medical Society, Ottawa, October 27th, 1898.

ing rapid progress, but outside sewage cannot compare, as to importance, with the internal sewage of the human system. It is a well known fact what the toxic effect of an impure gas is upon the system under the most ordinary circumstances. So in the intestinal canal supplied by a nervous system of a most elaborate and complex structure, it is most reasonable to suppose that the activity of these very neurons, in the ganglionic centres around this very canal, should in time become subject to marked functional inactivity, and long prior to any evidence whatever of organic disease. The gases of the human system are not so noxious as carbonic acid, and still, the want of care in the digestive process, cannot, and in fact does not, fail to bring about results of a most telling character in the very process of sanguification. The death process in life, is often slow, and yet, progressive in character. Intestinal villi, and the mucous membrane of this complicated alimentary canal, depend largely on the distribution of normal nerve force, in order to keep up normal activity. In this very canal, the death process frequently sets in, long prior to a recognition of the fact. One of the most interesting topics, recently brought to notice by at least four or five writers, two in Germany, one in France and one in America, is the idea, that the nerve cells, were capable of movement, to such an extent as to enable them, to alter the degree of their relationship to one another. The only physiological observation quoted in behalf of this theory, is that in 1890, by Wiedershein, a German, who saw in "*Leptodora Hyalina*," an invertebrate, one of the Entomostraca, the nerve cells of the œsophageal ganglion move in a slow flowing fashion. Altered relationship of the neurons may be connected with a retarded distribution of nerve power, and thus become closely associated with the development of the hysterical paralytic condition, so transitory in character. The explanation given, is that the neurons of the arm centre of the cortex, retract their processes in such a way, that their end tufts, no longer bear the normal relation to the spinal neurons. We must acknowledge that a new sphere of observation, is opened up, by this attractive departure in neurological structure, having so wide a range, and yet so closely associated, with the normal distribution of nerve power. The process of renewal of old combinations of neurons, has been ingeniously worked out, and may lead to the discovery of new truths, of much practical value, as to the regulating power of nervous energy. "Experiments appear to afford adequate evidence that, in a normal state of the body, the integrity of the medullary vaso-motor centre, is essential to the production and distribution of those continued constrictor impulses, by which the general arterial tone of the body is maintained, and that

“ an increase or decrease of vaso-constrictor action in particular arteries, or in arteries generally, is brought about by means of the *same medullary vasomotor centre*. But we must not conclude therefore that this small portion of the medulla-oblongata is the only part of the central nervous system which can act, as a centre for vasomotor fibres. We are rather to suppose, that the spinal cord, along its whole length, contains, interlaced with the reflex and other mechanisms by which the skeleton muscles are governed, vaso-motor centres and mechanisms of varied complexity, the details of whose functions and topography, *have yet largely to be worked out.*” (*Foster's Physiology*, 1893. p. 281 and 284.)

That there is much new ground to be broken, in the line of observation, connected with the spinal vaso-motor centres, is conceded by leading physiologists. “ It has been demonstrated that the body is constantly subjected to the risks of poisons produced within itself, many of the poisons produced, such as the ptomaines and leucomaines, are of the chemical nature of the previously known alkaloids, in toxic power, and reproduce their leading effects. The organism, even in a state of (supposed) health, is a veritable storehouse of these toxic substances. The respiratory passages, and intestinal canal, are crowded with micro-organisms. In these circumstances it is of interest to enquire, what defence, man can oppose to the disease and death producing poisons, by which he is so constantly endangered.” (Address in Medicine by Thomas Richard Fraser, M.D., British Medical Association.) Long prior to disease, the result of toxic origin, we have the indications of toxic functional disturbance and nowhere more so, than in the intestinal canal. According to Foster's (p. 285) *Physiology*, the chief and usual cause of the movements of the stomach and intestines, is the presence of food in the interior. “ The afferent impulses from the stomach travel apparently by the vagus, *but we do not know the exact manner in which the food produces the movement*, and again (on page 384) the alimentary canal, like the heart, though to a less degree, possesses within itself such mechanisms, as are requisite for carrying out its own movements, and as in the case of the heart, *there is no adequate evidence that the ganglia scattered in its muscular walls, viz., those forming the plexus of Auerbach, play any part in developing these movements.*” Thus far it is quite evident, a considerable degree of doubt exists, as to the exact physiological ground work, on which rests the remarkable changes which take place in food transformation, prior to becoming incorporated with human tissue. The conversion of vegetable matter into muscle or blood, is unique in character, and entirely in advance

of the finest external laboratory manipulation. The plexus of Meissner in the submucous coat of the bowels ; the plexus of Auerbach, in the thin sheet of connective tissue of the muscular layers of the intestine ; and lastly, the vaso-motor centres of the spinal cord, constitute a trio of nerve generating power alike interesting and attractive, and which doubtless are intimately associated, in the transforming process of food to tissue, and yet we must acknowledge, with Prof. Charcot, that there still exist numerous lacunæ in this study. The nervous system, reduced to very simplest form, is represented by two elements, a nerve cell, and a conducting tube, and the association of these two elements constitutes nerve centres, and nerves, which guide and direct capillary circulation in every part of the human frame. The point to which I desire to call attention at present, is with reference to the influence gradually produced in the system, by defective intestinal sewage, and how it is to be remedied. That such at times produces a poisonous influence on nerve tissue and capillary circulation, is undoubted in character, and of much greater importance and frequency, than generally supposed. While noting the effect of electricity, through the neurotone, on the muscular tissue of the dilated or ballooned bowel, I was impressed by the marked improvement otherwise, in the system, in consequence of which, a series of observations was made, on the alimentary canal, which led to the following deductions :

1st. The irregularities of the digestive process in the alimentary canal, are of much more frequent occurrence than generally supposed.

2nd. The internal sewage of the system, cannot be too critically examined.

3rd. The toxic effect of such accumulations leads to a condition of the nerve centres, changed in character, and destructive in a great measure to the elimination of normal nerve energy, in the ganglionic nerve centres. That the recently discovered neurons, play an important part in the vitalizing power of nerve energy, is a reasonable deduction. A path is now open, in which life, under ordinary circumstances, *may be prolonged*, providing no organic disease is present. There is little doubt, that as years pass on, in a quasi indifferent manner, the *neurons*, of the ganglionic centres; particularly in close relationship with the alimentary canal, become influenced, by the toxic effect, of defective internal sewage, and as the result, blood making power becomes defective, as photographed in facial expression. The question is, how to counteract this condition, and bring about, as near as possible, a normal state of the system. One of the first points to observe, beyond the ordinary conditions of the alimentary canal, is the state of the abdominal nervous system. Under ordinary circumstances

the application of the Electro-Neurotone of Hodgkinson, to the abdominal walls, produces a sensation electric in character, which must be adjusted, to the needs of the patient. The power of static electricity seems to be chiefly as a regulator of functions, according to *Munnell, of Brooklyn*. It increases metabolism, so a person can absorb more oxygen, and this improvement in nutrition, is a vast power for good. The spark of its action, sets up a molecular change, and acts as a stimulating massage. At the convention of the American Electrotherapeutic Association, Dec. 29, 1894, (*The Times and Register*) it was reported, that static electricity causes contraction of the protoplasm—both animal and vegetable, it excites nerve fibres, nerve centres, and nerve cells, to functional action, and to produce their separate effects, motor, sensory, secretory, sympathetic and vaso-motor. These data electric in character, induced me to make further enquiry, by which it was ascertained that many cases of constitutional debility had their origin in the alimentary canal, and that the nervous system participated largely in such abnormal conditions.

In the discussion of Dr. Buzzard's paper (Edinburgh Meeting British Medical Association) on the Selective Action of Toxic Bodies on the Nervous System, the following statement was made: "It seems likely from the clinical symptoms, that whilst at the outset there is profound interference with the nutrition of 'the neurons' over a widely extended area, recovery rapidly occurs, in such as do not suffer change in their nucleus." It is this class of cases particularly, to which I refer, of a purely functional character, and not associated with *insular sclerosis*, or even *multiple neuritis*, both of which conditions are most likely the result of degenerative changes in nerve structure. Constitutional debility, the result of defective intestinal assimilation, protracted in character, is undoubtedly a powerful factor, in the poisoned nervous system, to keep up that condition. The neurons of the nerve centres, although not changed in structure, are in a measure defective as to function. Here, as well as in other neurotic states of the system, the precise condition is not, as yet, defined. However, when by the neurotone treatment, so marked improvement as to function takes place, the inference is, that the electric current, in a measure re-vivified the nerve centres, and their neurons, in direct connection, so as to re-establish the normal distribution of nerve power, in those parts defective in that particular. The following recent observations of E. Müller and Manicatide (March 3rd, 1893, *Deutsche Medicinische Wochenschrift*). "Examined the cells in the central nervous system, of seven infants, under three months of age, who had suffered from gastro-intestinal diseases. In all seven, changes

were found in the cells, of the brain and spinal cord. The cells were found to lose their form, become indistinct and even the processes of the cells disappear, and the nucleus, as well as the nucleolus, often displaced."

These observations point beyond a doubt, to a close relationship between alimentary assimilation and nerve cell agency. Everything has a beginning, and the problem is, how to obviate the difficulties, which may take place even in ordinary intestinal functional disturbance, at a time when treatment may be of service *and life's span thus prolonged*. The physiological action of electric currents plays an important role, in the treatment of diseases of the nervous system. True, the nerve current has been compared to electricity, but this idea, has recently been abandoned. The important point is, that by the action of the electric current, we modify the electric state of the nerve, and the properties of the sensory or motor nerves reappear, and perform their regular part in the economy. There, by the influence of currents, nutrition is sure to improve the vitality of the tissues stimulated to renewed energy, brought about by a direct action on the trophic nerves, and on the tissue molecules of the organism, whose vitality is thus summoned into increased activity.

Alexander James, M.D. (Edinburgh, British Medical Association), in his paper on the Clinical Varieties of Hepatic Cirrhosis, stated "that the effect of an irritant on living tissue is increased metabolic activity, and the effect of increased metabolic activity is the sacrifice of growth and development to reproduction."

The systemic condition on which I now base these observations, is in cases of diminished metabolic activity in the *neurons*, prior to a sacrifice of growth and development, as after that stage, little if any influence in an electric method can be exercised. Fully aware of the doubt and uncertainty of biological problems, and while seeking for the explanation of certain functional disturbances, these few facts have been noted.

The alimentary canal and its disturbances, have within the past few years, attracted more than ordinary attention. The impression is gaining ground, that various manifestations of disease may arise through the absorption of toxic substances from within the canal. The arguments in favour of the toxæmic origin of intestinal disturbance are not sufficiently clear, owing to the absence of clinical data based on the pathological conditions involved. The important fact announced in 1880 by Baumann, that the various aromatic substances formed within the intestine, such as indol, phenol, cresol, etc., produced by "*anaerobic bacteria*" upon proteids, are passed off

by the body, when absorbed through the urine, in combination with sulphuric acid in the form of etherial sulphates (Herter, *N. Y. Medical Journal*, July, 1895). This fact forms the basis of the study of *intestinal putrifaction*, on which line of chemical research, this subject requires much careful enquiry. The frequency of perityphlitis is an acknowledged fact, and the discovery by Salkowski, of pathological quantities of *indican* in connection with that disease, leads to a line of investigation of much interest. The symptoms which usually direct attention to the alimentary canal, are often so slight as to readily escape notice, while at the same time, the constitutional results may be well defined. The following cases are presented as an illustration of clinical manifestations occurring in individuals with whom intestinal indigestion and neurotic disturbance were prominent factors. The sensation of pain in cases of intestinal indigestion is not a usual symptom, and it is in quasi indifferent cases, where putrefactive changes are slowly progressing without even spasm of the muscular coats of the intestines, that careful information should be obtained, not only as to the rapidity of the digestive process, but also as to the peculiarity of the alvine evacuations. In no part of the entire system, does functional disturbance proceed more steadily and quietly than in the alimentary canal, and it is remarkable how its mucous lining accommodates itself to the high living of the present age.

Diminution as to firmness of muscular fibre ; occasionally indications of lassitude ; a feeling of emptiness, described as a "gone feeling," indisposition for either mental or physical exertion, without any assignable cause, are marked pointers for *neurotone* treatment to correct functional, neurotic, and digestive irregularities, in the alimentary canal, prior to the advent of structural change. The treatment in such cases, beyond ordinary tonics and purgatives, as required, consists in neurotone applications, to the abdomen and spinal column alternately, at intervals of two or three days, and not over ten minutes at any one time, the parts being first moistened by a sponge. Such may be continued, until the nerve centres, recover their tone, which usually occupies from three to four weeks, in ordinary cases. When objections are experienced, the applications may commence on the arms and legs.

CASE I. E. G., æt. 58 years of age, of temperate habits, has had indifferent health, for some months, at times depressed and despondent, indications of debility, insomia and irregular appetite. Occasional headache, coated tongue, flatulence, and at times a sense of cardiac uneasiness, urine voided in normal quantity, with excess of lithic acid ; these symptoms alternated considerably, just as abdominal functional



disturbance fluctuated. Baths, tonics and diet, prescribed and yet the almost hypochondriac condition continued, until placed under *neurotone* treatment. After three weeks, he was greatly improved in health, and quite equal to his usual official duties.

CASE II. Mrs. McQ., æt. 63 years, mother of four children, weight 103 lbs., temperate in every way. Experienced a feeling of general debility, languid, wanting in tone, and in fact, indisposed to undertake any bodily exertion whatever, appetite small, and digestive power feeble. Cardiac action regular, but weak. Muscular system flabby and deficient as to normal tonacity, slight constipation, intestinal flatulence, but no abdominal pain. Sleep only moderately composed. Urine voided in normal quantity, with no presence of sugar or albumen. The indisposition extended over a period of fully two years. June 5, 1898, placed under *neurotone* treatment; as she improved the sensitiveness of the skin became more acute, and in about two months she looked like a different person, active, willing to walk, and without fatigue; appetite much improved; the entire tone of the nervous system was such as not experienced for years previous, and returned to her home in British Columbia, with every hope of many years of increased usefulness.

CASE III. Mr. B., æt. 28 years, weight 128 lbs., temperate. Has found of late that he tires readily, and awakes in the morning not sufficiently refreshed. No organic disease. For fully three years, experienced indications of debility, without any special cause except irregularity as to intestinal absorption, abdomen at times considerably distended with gas. Marked palor of face and lips, and an exsanguine condition of the body generally. A peculiar leaden feeling about the abdomen, with a ballooned duodenum. Bowels not regular. No nausea or vomiting. Appetite as a whole good, but the strength and support gained, not in proportion to food taken, evidencing the escape of nutrient material. Urine voided in normal quantity, but overcharged with lithates. About twelve months ago became indisposed, owing to the peculiar feeling in his bowels, which continued until May, 1898, when I placed him under *neurotone* treatment twice a week for two months, after which the improvement as to his general condition was most marked. Prior to that date, tonics had little effect. At present he can wheel 15 to 20 miles a day, without inconvenience, which he could not undertake for months previous. The tone of the entire nervous system is most marked, and life now most enjoyable.

CASE IV. Mrs. F., æt. 78 years, mother of a large family, weight 108 lbs. Temperate. No evidence of organic disease. Muscles thin and

flabby. Functions of the system, regular as a whole. For several years experienced flatulence and constipation, regulated by occasional castor oil. About two years ago, the digestive system, particularly the alimentary canal, was the seat of very considerable irregularity. A degree of general debility followed, attended by marked weakness, almost approaching heart failure, and inability to move about, with accustomed activity. In May, 1898, placed her under *neurotone* treatment, continued twice each week, for a period of two months. At the expiration of that time, markedly improved, as to alimentary digestive power, and the general vigor of her system. Oct. 12, 1898. Moves about her home with the activity of twenty years ago, and now expresses herself as feeling almost youthful once more. This is an illustration of neurons, almost on the shelf, called into action again and becoming useful factors in the promotion of renewed life and activity.

# INFECTIVE PERITONITIS, WITH SPECIAL REFERENCE TO A SUGGESTED METHOD OF IMPROVING THE PRESENT METHODS OF SURGICAL TREATMENT.

BY

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The statement that the last twenty-five years have been characterized by marvellous advances in the treatment of abdominal diseases by surgical means has become a truism. Yet it must be confessed that in microbial infective processes involving the peritoneum scarcely any advance has been made toward arriving at a sure and successful method of treatment.

The words of a well-known English surgeon, Mr. Frederick Treves, are worthy of note in this connection. He states that surgical treatment has been most discouraging in acute peritonitis following gangrene, operations and puerperal infection. It has met with but little better results in cases of perforation, in which serous inflammation has been well established . . . while the operative treatment of localized suppurative peritonitis has been remarkably successful. In the case of general diffuse non-tubercular peritonitis there is no record to boast of and little progress to chronicle."

Again he states that he is doubtful if a single human life has been saved by surgical interference in a genuine case of peritoneal toxemia (*i.e.*, the condition in which infective changes in the peritoneum are associated with marked toxic absorption). Statistics as to the deadly nature of infective peritonitis, with whatever condition associated, and both in cases which have been treated medically and those which have been subjected to operation, can be readily furnished by authorities in many countries.

The following may be mentioned in particular : Treves refers to 100 cases in the London Hospital, of which 70 were fatal.

Kaiser notes 30 cases in which operation was performed for peritonitis, following perforation, of which 19 were fatal.

Körte, Mickulicz, and Krönlein have described a number of cases of purulent peritonitis, 40 in all, in which operation was carried out, of which 29 were fatal ; but it must be noted that of the 11 recoveries

7 occurred in cases where the suppuration was localized. Krecke describes 119 cases operated upon, of which 68 died.

Hawkins, of St. Thomas' Hospital, London, describes a series of 11 cases of diffuse purulent peritonitis, all of which were fatal.

While the above statements will be generally accepted as regards diffuse peritoneal infection, there will be an equal unanimity of opinion that during the last few years considerable advance has been made in the operative treatment of localized infection, this being very largely due to the work of American surgeons. A careful study of well-prepared statistics from different countries will, however, reveal the fact that in even in localized infective suppurative conditions there yet remains a considerable opportunity of diminishing the death-rate in connection with operative procedure.

If, for instance, we take localized inflammations in connection with appendicitis, it will be found that the brilliant results obtained by so many operators have been in cases in which the local conditions have been of a favourable character, but that where infection spreading from the appendix has led to severe localized swellings, associated with suppuration or gangrene, the results have been much less satisfactory. In this relation it is of interest to refer to statistics of operators regarding large numbers of appendicitis cases.

Porter of America gives the following interesting analysis of 448 cases :

Recoveries .....	371.		
Deaths .....	77.		
Average mortality .....	17.23	per cent.	
A. Removal of appendix during attack :			
Recovered .....	120=	80.3	per cent.
Died.....	20=	19.7	per cent.
B. Removed during quiescence			
Recovered .....	13=	92.86	per cent.
Died.....	1=	7.14	per cent.
C. Incision and drainage of abscess :			
Recovered.. ..	154=	81.82	per cent.
Died.....	54=	18.18	per cent.
D. Appendicitis without operation :			
Recovered . . . . .	82=	86.32	per cent.
Died.....	13=	13.72	per cent.

Hawkins, of St. Thomas' Hospital, London, analyses 264 cases as follows :

	Death.	Recovered.
A. Non-purulent perityphlitis .....	0	190
B. Purulent perityphlitis .....	10	28
C. General peritonitis.....	27	9
Operative treatment to above :		
1. Appendix removed once in (A).		
2. In (B) Abscess opened and drained in 33 cases.		

3. In (C) Abdominal section and flushing in 11 cases. (In 3, appendix removed ; all died.)

In all forms of appendicitis treated according to conservative ideas, the mortality was about 14 per cent.

Armstrong, of Montreal, gives the following statistics collected from three hospitals in that city since 1889, regarding 517 cases of appendicitis, with a mortality of 12.8 per cent. Up to July, 1892, they were mostly in medical wards ; since 1892, mostly in surgical wards.

In the Montreal General Hospital, from 1858 to 1873, peritonitis is alone mentioned in the hospital statistics. After 1873 perityphlitis had a mortality of 12 per cent. ; peritonitis (so-called) a mortality of 20 per cent.

	Deaths.
Total peritonitis and perityphlitis, 1858-1890 .....	152
Pericecal abscess.....	2
Perforation of the veriform appendix.....	1
	155

Mortality during this period was thus about 23.8 per cent., or nearly double that in the succeeding six years.

Of the 517 cases, 228 were non-operation cases, with a mortality of 3.12 per cent., the deaths being entered in the records as due to septic peritonitis.

Three hundred and eighty-nine were operation cases, 84 of which were interval cases and 305 were in the acute stage ; mortality, 22.65 per cent. (or 63 deaths).

Of these 63 deaths, 36 were in general peritonitis, 2 in tubercular peritonitis and appendicitis, 18 in abscess (localized), 5 in pyelophlebitis in mesentery and liver, and 2 in pneumonia.

That the important element in infective peritonitis is microbial activity is now practically everywhere believed, and facts are rapidly accumulating regarding this field of pathology. Various micro-organisms have been found associated with peritonitis, of which the most frequent are the bacterium coli commune, streptococcus, and staphylococcus pyogenes aureus, the most frequent being the first named.

Thus Fränkel, in 31 cases of peritonitis, found bacterium coli commune in 9, streptococcus in 7, staphylococcus aureus in 1, pneumococcus in 1, and bacterium lactis aërogenes in 2. In 4 cases he could not find any micro-organisms.

Tavel and Lanz found bacterium coli commune alone in 15 cases, in association in 16 cases ; streptococcus alone in 3 cases, in association in 15 ; staphylococcus alone in 2 cases, in association in 6 ; pneumococcus alone in no case, in association in 2.

Hawkins found in 61 cases of general peritonitis or appendicular

abscess due to appendix disease, that the bacterium coli commune was present in 57, in 50 cases being the only germ present. This authority states that in most cases of peritonitis due to intestinal perforation the bacterium coli commune is found usually alone.

The predominance of the bacterium coli commune, not in association with other micro-organisms, is of interest, and the explanation in a number of cases may be understood by Barbacci's experiments on animals. He found that when perforating peritonitis was produced artificially this organism alone survived, even though for a time in the early stages of the inflammation other germs might have developed. (In these cases the bacterium coli was found in different parts of the body, *e.g.*, in the liver, spleen, kidneys, glands, etc.)

In cases of hernia different observers have found bacterium coli commune in the sac, in a large percentage of cases; in internal strangulation in the peritoneal exudation. In the latter condition, produced artificially in dogs, Bönnecken found this organism in most cases; occasionally other germs were found. Then in suppuration and ulceration of the gall-bladder is often found the bacterium coli commune, in many cases by itself.

Staphylococci are rarely found alone in peritonitis; generally with more virulent organisms. In puerperal peritonitis the most frequent organism is streptococcus. In peritonitis following abdominal section, streptococcus, staphylococcus aureus and albus are most commonly found; in some cases the bacterium coli commune is found. The pneumococcus very rarely causes peritonitis; it is hard to produce an infection with it experimentally in animals.

In regard to the bacterium coli commune, Macaigne states that a culture from the healthy gut is harmless in the peritoneal cavity, and that the organism becomes virulent when there is some disturbance in the bowel wall due to such causes as diarrhoea, constipation, strangulation, etc.; its virulence is increased, if, along with it, there be introduced sterilised fluid from the intestines, sterilised water, ox-gall, or blood.

It has also been pointed out by Treves and others that freshly filtered fluid from the bowel, placed in the peritoneum, causes peritonitis, which is usually fatal; in such a case the bacterium coli commune is the infective agent. If the fluid be filtered through plenty of gauze the effects are less severe. If the fluid be sterilised no evil results follow its introduction into the peritoneal cavity.

Klecki has pointed out that the ileum contains the most virulent forms of bacterium coli, the jejunum the next, and the colon the least virulent.

He has also shown that when artificial compression of a knuckle of bowel is carried out in the dog, leading to fatal peritonitis, the virulence of the bacterium coli taken from the constricted portion is much greater than that of specimens taken from uninjured parts of the bowel. He believes that the state of the epithelium covering the intestine is a most important factor in determining the passage through the wall of micro-organisms.

It is of great importance to bear in mind the variation in virulence of micro-organisms, both in varying conditions in the body, as well as under artificial conditions. Bacterium coli commune, for instance, is found to vary in artificial media, losing its virulence more quickly in agar than in broth. Ekelhorn showed that when taken from mild forms of appendicitis it was less virulent than when taken from acute and severe attacks.

In this connection may be noted the observation of Tavel and Lanz, who found this organism in the peritoneal cavity in some cases of localised appendicular abscess without the presence of any peritonitis; and that of Welsh, who found the organism in the peritoneal cavity in some cases of non-perforating ulcers of the intestine.

Next, attention may be directed to the peritoneum as regards its normal functions, and its reaction to infective irritants. It has been shown by Wegner that the surface area equals that of the skin. There is some doubt as to the presence of stomata between the endothelial cells; Clark, in his recent able work, states that appearances which have been described as stomata are really the retraction of the cells at their junctions. Absorption of fluids from the peritoneal cavity probably takes place both by blood-vessels and lymphatics.

Attention has recently been directed to the following interesting experiments of Muscatello. Fine carmine granules in suspension were injected into the peritoneal cavity of dogs. When the dog was suspended head down:

In five to seven minutes granules were found in the retrosternal lymph-glands even before they were visible in the lymphatics of the diaphragm. There was no trace in the pelvic and abdominal lymphatic glands; at the end of six hours the diaphragm was injected; in one and one-half hours they were found in the glands of the spleen and liver.

Where the dog was suspended with the head up:

After five and one-half hours no carmine was visible to the eye in any gland. Microscopically, however, it was found in the retrosternal and in the other intrathoracic glands, but not at all in the spleen, liver, pancreas, lumbar, or aortic glands. Muscatello thinks, there-

fore, that the normal course taken by particles of solid matter in the peritoneal cavity, is first through the diaphragm to the thoracic glands, thence into the blood stream, whence they find their way to the glands in various parts of the body.

The current to the diaphragm exists in spite of gravity, though the latter retards it. He thinks that the diaphragm is the only part of the peritoneum capable of absorbing solids from it, the lymph-glands in the mediastinum being the collecting centre. Most granules are carried off by leucocytes which pass into the peritoneal cavity, but it appears that very small particles may pass through the peritoneum without much help.

The peritoneum is normally very sensitive, but the sensitiveness is lost as it becomes altered in inflammatory processes. The following experiments of Reynier and Reichel may here be noted :

1. They poured boiling water or perchloride of iron into the peritoneal cavity of the rabbit, producing marked shock and death within twenty-four hours.

2. The above experiment, when preceded by a nerve sedative, *e.g.*, chloral, always resulted in the animal living twenty-four hours or more.

The reaction of the peritoneum varies according to different circumstances. I desire to refer only to the following :

#### 1. Situation :

It has been fairly well established that the small intestine and omentum are most sensitive to infection, as well as to the rapidly spreading variety of peritonitis.

The parietal peritoneum is considerably less sensitive ; and the liver peritoneum is not very sensitive.

It is not common to find localized or encysted peritonitis in the area of the small intestine apart from tuberculosis, as Treves points out. The localized forms are found almost entirely in the subphrenic region between the diaphragm and transverse colon, in the region of the cæcum, especially in its outer side ; and in the pelvis.

#### 2. Influence of micro-organisms :

Variations are produced according to the nature of the organism, according to differences in virulence, according to the quantity introduced, etc. Consequently it is not surprising that we find as a result of microbial infection of the peritoneum widely different clinical phenomena and pathological changes. Thus we may find little or no illness resulting, with practically no changes of importance in the peritoneum itself ; or, on the other hand, we may find that death quickly occurs, associated with intense toxemia, in the course of a



few hours ; or between these extremes may be found a series of cases varying both in the symptoms produced and in the changes induced within the body.

Tavel and Lanz have published experiments dealing with the changes produced by difference in dosage. They have shown, for example, how a very slight dose of a given microbe might produce little or no disturbance, while a larger dose produced a chronic peritonitis, more or less localized ; a still larger dose causing a diffuse inflammation and a fatal end ; while a very large dose produced death before any local changes were developed.

The peritoneum is capable of disposing of certain quantities of micro-organisms. Various experiments may be referred to in this connection.

#### 1. Grawitz's :

(a) Non-pyogenic microbes introduced into the peritoneal cavity in large or small quantities cause no harm.

(b) Large quantities of microbes which ordinarily are harmless, may be able to start a severe peritonitis if the absorptive power of the peritoneum be impaired.

(c) In several cases streptococci and staphylococci injected in a watery solution caused no changes.

(d) The introduction of the same quantity with a fluid difficult of absorption led to purulent peritonitis ; the same occurred where the peritoneum was injured.

Pawlowsky carried out Grawitz's experiments and obtained similar results.

#### 2. Waterhouse's :

(a) Six c.c. of a cloudy culture of staphylococcus aureus was introduced into the peritoneum of a dog, and death of the animal did not occur.

(b) The same quantity, along with 8 c.c. of urine or blood, did not cause its death.

(c) The same quantity, with 15-20 c.c. of urine or blood, led to severe peritonitis.

(d) Three cm. of the culture, with 3 cm. of blood-clot caused death in twenty-four hours.

(e) Two c.c. of staphylococci or 1 c.c. of streptococci from an acute abscess led to death in twenty-four hours.

When similar quantities of these cultures referred to were introduced with plenty of water, the animal usually survived ; when introduced with turpentine there was no peritonitis, but in cases where the peritoneum was first irritated with turpentine and the microbes

then injected, fatal peritonitis then occurred. This authority also found that the presence of ascitic fluid in the peritoneum of the cat favoured death after the introduction of the cultures.

Halsted found by experiment that ligature of the omentum followed by the introduction of infective cultures caused peritonitis in every case.

Regarding immunity in the peritoneum, Treves, Melsome, and others, think that a certain degree may be produced in animals, both local and general, against septic infection.

Treves points out that operations in chronic peritonitis, or after repeated subacute attacks, are less risky than in cases where there has been no previous trouble.

NOTE.—The alimentary tract in its whole extent contains all kinds of micro-organisms. It is thought that they are more numerous in the large than in the small intestine. (They appear to be more common in carnivorous and omnivorous animals than in the graminivora.)

With reference to the passage of microbes through the alimentary tract and the fate which they accomplish under normal conditions little is known.

It is of interest in this connection to mention Gillespie's experiments. He found that the hydrochloric acid of the stomach is very detrimental to pathogenic organisms. If much food be taken, especially of proteid nature, or if the acid be deficient, there is established the condition favourable to the passage through the stomach of the micro-organisms unhurt.

*(To be continued.)*

## Case Reports.

### THROMBOSIS OF CAVERNOUS SINUSES FROM SUPPURATION IN NASAL CAVITIES.<sup>1</sup>

BY

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The patient, a girl of 15, was admitted to the Montreal General Hospital on October 1st, 1898, complaining of headache and weakness.

Two years previously she was laid up for two weeks with rheumatism in the ankle. Enquiry revealed that there had been a purulent discharge from the nose some weeks previously, but there had been no aural affection.

About two weeks previous to admission, the patient began to suffer from headache. She kept at her work for a week, when she took to bed with severe headache, weakness, and, during the ensuing days, diarrhoea.

*State on admission.*—She is a moderately nourished girl, inclined to be emotional and cries readily. There is intense headache and on moving she holds her hands to her head. The skin is hot and dry, the temperature  $101\frac{2}{3}^{\circ}$  on admission. The pupils are moderately dilated and equal. The teeth are irregular, the mouth open, and the palate much arched, conditions suggesting adenoids. The tongue is moderately coated. The abdomen gives gurgling in the right iliac and left lumbar region, but there is no tenderness, no splenic tumour or rose spots. The heart and lungs are normal, the pulse 120 small and compressible.

Oct. 2. The temperature has varied from  $102\frac{2}{3}^{\circ}$  to  $105^{\circ}$ . In the afternoon the house physician, Dr. Schwartz, noticed that the left eye was somewhat swollen.

Oct. 3. There is marked œdema of both upper and lower lids, more marked on the right side, with distinct proptosis of both eyes. The temperature continues high, and a rigor took place this afternoon, the temperature rising to  $106\frac{2}{7}$ .

Oct. 4. Proptosis increased in both eyes since yesterday. Eyelids are closed, and on the left side they bulge forward to the level of the forehead, and rather beyond it on the right. The conjunctiva of the right is markedly swollen and œdematous, projecting forward through the

<sup>1</sup> Read before the Montreal Medico-Chirurgical Society, November 7th, 1898.

closed lids. On the left side there is slight œdema of the conjunctiva with a sub-conjunctival hæmorrhage. The eyeballs are immobile, the left pupil dilated as before, the right pupil not seen, owing to swelling and inability to open the eyelids. The left optic disc is slightly swollen, its edges blurred and the veins are full. Slight œdema of the forehead between the eyes is present. There is slight fulness of the side of the neck, but no tenderness of the mastoid, and the middle ears are normal. A second rigor occurred during the previous night.

Oct. 5. A third rigor occurred this morning. Œdema over the right temple and right side of face.

Oct. 6. Occasional delirium occurred during the night. Swelling of the right side of the face and neck is well marked, and there are red lines on the forehead along the course of the veins (purulent phlebitis). Before death the temperature rose to 108°.

*Anatomical diagnosis.*—Septic thrombo-phlebitis of cavernous sinus; suppuration and necrosis of ethmoidal cells, orbits and scalp; acute purulent meningitis; old suppuration in left antrum; small infarct of spleen; cloudy swelling and fatty degeneration of all organs.

Body of a slightly built young girl, with moderate rigor. Marked bulging of right orbit. Veins of forehead above root of nose are prominent and have a varicose appearance.

On removal of scalp, small pockets of dirty grayish pus are found about the right orbit and in the centre of the forehead; another pocket just behind right ear. Each of these contains about a thimbleful of greenish fetid pus, which on examination shows diplococci and a few short bacilli.

Skull cap thin, diplococci scanty; no signs of suppuration about bone or periosteum. Longitudinal sinus free. The pia on convexity is a little œdematous, but not opaque.

Vessels moderately injected. No lymph.

In the left frontal and orbital regions there is a layer of lympho-pus extending from the Sylvian fissure to the anterior extremity of lobe, the pia being much matted. Small hæmorrhagic areas are seen in the cortex beneath. Another pocket of lympho-pus, size of thumb nail, lies on left side of the pons, the adjoining vein being plugged with firm thrombi. Sylvian arteries free. Right Sylvian fissure free from inflammation. At the base of cerebellum is a collection of pus beneath the arachnoid and covering the middle lobe. Ventricles appear free, but on section at level of island of Reil some purulent infiltration is seen to extend along the deeper convolutions. Medulla intact. Grayish-red soft clots seen in lateral sinus, non-adherent, but speckled with whitish points. In the sella tursica, to the right of the pituitary body, is an area of purulent infiltration.

extending in the direction of the cavernous sinus, which is plugged. A similar condition exists on left side, but this is less marked. No signs of old suppuration in frontal sinus. The ethmoid sinus is full of pus and the bones on each side are necrosed. The necrosis also involves the sphenoid wings and the occipital naso-pharynx shows thickening and granulation of mucosa. No adenoids. Turbinate bones show very little change. Left antrum full of pus and a gelatinous looking pulp with some caseous matter. Tissue of both orbits shows purulent infiltration around posterior half of the globe. The right optic nerve is considerably swollen near the point of entrance into eyeball.

Gums and teeth show nothing abnormal.

Heart muscle somewhat pale and opaque. Pericardium  $\frac{1}{2}$  oz. clear light-coloured fluid. Valves and coronary vessels healthy. Lungs healthy and crepitant throughout. Colour pale gray. Liver somewhat enlarged, fatty and nutmeg. Intestines and stomach healthy. Cystic ducts patent. Spleen pale, soft and small infarct about the size of a split pea on surface. Pancreas normal. Kidney soft, flabby and pale. Capsule peels readily, surface smooth. Venæ stellatæ prominent. Cortex pale, almost yellowish and swollen. Medulla and pelvis look healthy. Suprarenals healthy. Pelvic organs healthy, except for slight cystic condition of ovaries.

When first admitted the gradual onset of the illness with diarrhoea and headache suggested typhoid; the headache was, however, much more severe than is usually seen in this disease, and the positive evidences of typhoid, rose spots and Widal's tests, were absent.

The appearance of proptosis and œdema of the lids appearing first on the left, and a few hours later on the right, led to a diagnosis of thrombosis of the cavernous sinuses, beginning on the left side and spreading to the right through the circular sinus, and that its origin was septic, was indicated by the rigors and high temperature.

The origin of the disease was somewhat obscure. The history of nasal discharge suggested some purulent condition in the nasal fossa, although nothing was observed in the anterior nares to confirm such a view.

This case bears a close resemblance to thrombosis of the lateral sinuses, from middle ear disease.

The autopsy showed that the infection had spread from the sphenoidal and ethmoidal sinuses, which were filled with pus, and the analogy is still further borne out by the purulent meningitis at the base of the brain.

The symptoms are very striking—the great œdema of the lids, and

the proptosis of both eyes could only result from this cause. Whilst paralysis of the ocular muscles is usually present in such cases, it seemed impossible to me to state whether the immobility of the eyes was due to this cause or to fixation of the protruded eyeballs by swelling at the back of the orbits.

The œdema of the face, which is absent in pure cases of sinus thrombosis, is satisfactorily explained by the purulent phlebitis of the veins of the face.

MacEwan, in his work on Pyogenic Infective Diseases of the Brain, relates the history of five cases of thrombosis of the cavernous sinuses, one of which was due to infection from an old standing syphilitic œzæma.

Coupland (Trans. of Ophth. Soc., Vol. III., 1887) in reporting a case of cavernous sinus thrombosis, has added twenty-eight others. Of these only one had a distinctly nasal origin, being due to œzæna probably of syphilitic origin. Pus was found in the sphenoidal sinuses.

It would thus seem that suppuration in the nose is a rather rare cause of cavernous sinus thrombosis. The origin is much commoner in suppuration of the middle ear, with thrombosis of the cavernous sinus extending forward. It is occasionally due to suppuration extending from the orbit and from necrosis about the pharynx in scarlatina and diphtheria.

# A CASE OF CHOLECYSTICO-GASTRIC FISTULA WITH ACCOMPANYING DIVERTICULA IN THE DUODENUM.

BY

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It is not necessary to point out that there are instances on record in which as a consequence of cholelithiasis the gall-bladder forms fistulous connections with an extraordinarily large number of other organs; intestines, urinary passages or genitalia, the trunk or branches of the portal veins, the bronchi, and the outer surfaces of the body. Of these forms, the gastro-intestinal and the cutaneous are by far the most frequent and important. In the gastro-intestinal, connections between the gall-bladder and the stomach are comparatively rare. Von Schueppel, in his well known article upon diseases of the biliary passages in Ziemsen's Cyclopaedia, merely mentions their rarity, nor have I been able in a rapid review of the literature to come across any statistical table giving the frequency. Apparently very few cases have been recorded, and most recent writers upon diseases of the bile-passages have been content to refer to the older authors, such as Murchison and Courvoisier, without having seemingly met with the condition in their own experience.

Cases of vomiting of gall-stones seem not to have been so infrequent but as spontaneous cure takes place readily, very few have been confirmed by post-mortem examination.

In general the cases in which there are instances of such gastro-intestinal biliary fistula give no history and present no symptoms. The case I am about to narrate presents this feature.

Mrs. M., an aged woman of 85, was admitted to the Royal Victoria Hospital under Dr. Garrow, to whom I am indebted for these notes, with an impacted fracture of the head of the right femur. According to her statement, save for injury to the right shoulder some 20 years ago, she had always until this accident enjoyed good health.

Upon clinical examination, the vascular system was found normal; a few moist râles were heard over the right base below and there was nothing abnormal in the urine. The abdomen was somewhat sunken and the bowels constipated. She became gradually weaker, and a low form of delirium set in. While no special symptom called

for notice, she gradually failed and died some two weeks after admission.

At the autopsy performed eight hours after death, there was little evidence of any inflammation round the seat of the fracture, the neck being found firmly impacted in the head of the bone. The organs in general were light and small presenting advanced senile atrophy. The vessels presented extensive atheroma.

The stomach was long and fusiform with atrophied walls, almost empty. The main feature was the existence of an adhesion between the pyloric region one-half inch from the pylorus along the line of the lesser curvature to the gall-bladder.

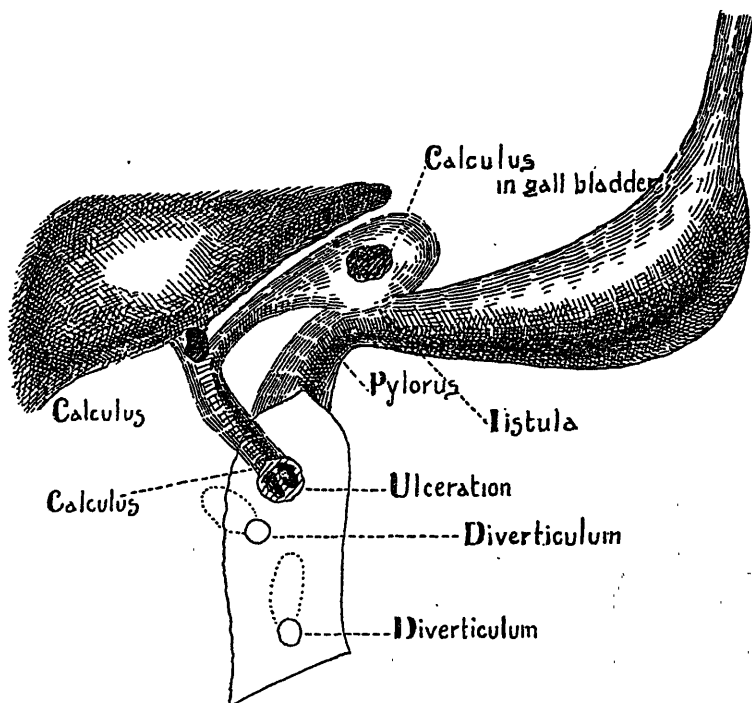
The duodenum was deeply congested in the region of the bile papilla. That papilla was absent being replaced by two ulcerous openings leading into the distended end of the common bile duct which was occupied by a mulberry-like calculus the size of a hickory-nut, and much yellowish inspissated bile. To the condition of the duodenum I shall return, only mentioning that the rest of the intestines beyond presenting senile atrophy, were normal throughout.

The liver was small, thin, and flabby, of a dark colour, showing upon section a considerable amount of bile staining. Upon attempting to remove the bile from the gall-bladder in order to make bacteriological cultures, only gas and whitish muco-purulent material passed into the pipette, and for a moment it seemed as though a mistake had been made and that a loop of the transverse colon was taken for the gall-bladder. Further examination, however, showed that between the anterior wall of the gall-bladder, which was considerably elongated, and the stomach, was a fistulous opening large enough to admit a large probe. One small rather mulberry-like calculus the size of a small cherry and of the mixed pigment and cholesterol type was present in the gall-bladder. The cystic duct was distended as was also the common duct. Immediately above the entrance of the cystic into the common duct was a large irregular calculus and the whole common duct was distended the size of the index finger and contained besides the above mentioned calculi much thick gritty yellowish bile.

The duodenum was deeply injected presenting evidence of acute inflammation. Immediately below and anteriorly to the orifice of the common bile duct was a saccular diverticulum about 5.50 centimeters long and as thick as the last joint of the thumb. This consisted of the serous and mucous coats; the muscularis being absent. It contained inspissated fæces. About two inches lower down near the point where the duodenum pierces the mesentery was a second diver-



ticulum directed upward toward the head of the pancreas. The condition of things may be illustrated by the accompanying diagram.



The relative frequency of the different varieties of cholecystic fistula is difficult to settle, there being some difference of opinion among the authorities I have consulted.

Courvoisier has collected ten instances of connections between the ductus communis and the duodenum, and 73 between the gall-bladder and duodenum; 39 cases of fistulous opening into the colon; 184 cases of fistulous connection with the exterior. Naunyn<sup>1</sup> in statistics taken from Courvoisier mentions eight cases of cholecystico-gastric fistula.

Courvoisier accordingly seems to consider the external fistula to be the commonest. Strümpell and Murchison, however, agree that the cystico-duodenal is the most frequent. Murchison in his classical work on Diseases of the Liver<sup>2</sup> gives the following as the order of frequency: cystico-duodenal, external, cystico-colic, cystico-gastric. All authorities agree that the last form is extremely rare. Murchison<sup>3</sup> gives 12 instances in which gall-stones were vomited up, but only one of these cases, that reported by H. Jeaffreson<sup>4</sup> was proved by autopsy to result from gastro-cholecystic fistula. Recently Mayo

Robson had a case in which a gall-stone was vomited up, and the patient recovered<sup>5</sup>.

Cruveilhier narrates a case<sup>6</sup> where the fistula between the gall-bladder and the stomach was found closed by a gall-stone.

Oppolzer<sup>7</sup> describes one in which the fistula was close to the pylorus as in the present case.

Frerichs, quoting Baillic and Weber, mentions two cases<sup>8</sup>.

Charcot in his important work on the Liver<sup>9</sup> notes Murchison as citing 4 cases of gastro-cholecystic fistula.

Fistulae between the stomach and bile-passages are, however, not invariably due to gall-stones.

Murchison records a case in which there was a fistulous opening between the dilated bile duct in the liver and the stomach. In this case, which was one of cancer of the liver associated with impaction of gall-stone in the common bile duct, the bile flowed through 3 or 4 rounded orifices in the anterior wall of the stomach, which orifices communicated with the dilated bile ducts and superficial portions of the liver. This was evidently the source of the bile found in the bowels in the stools during life. (*Diseases of the Liver*, 3rd edition, 1885, p. 419).

Cancer of the gall-bladder has been known to invade the stomach and thus bring about a fistulous communication (Chardel; *Monogr. des dégen. skirr. de l'estomac*. VIII p. 190).

The perforation of a simple ulcer ventriculi into the gall-bladder caused a fistula in a case recorded by Ogle; (*St. George's Hosp. Rep.* III, 1868).

An attempt has been made to explain the vomiting of gall-stones as due to a retrograde peristalsis of the duodenum forcing the stone back through the pylorus. As, however, the duodenum is so well bound down by peritoneum this seems very improbable and no doubt all cases are due to the presence of an actual communication between the viscera.

With regard to the elongation of the gall-bladder it is difficult to say whether this primarily assisted in promoting the formations of adhesions between the two viscera, or was due to traction. In cases of acute cholecystitis, such elongation is known to occur, and even to be associated with a tongue-like projection of the liver downwards (Riedel's sign).

References to duodenal diverticulum seem to be rare. Grawitz in his article on Intestinal Diverticula (*Virch. Archiv* 68 Bd.) does not mention them.

Intestinal diverticula have been divided into true and false. The

true consist of sacs, the walls of which are composed of all the coats of the bowel, and are usually congenital. Of these the well-known Meckel's diverticulum is the type. According to Orth congenital diverticula may occur in the duodenum. The false diverticula are those in which one or more of the bowel coats are wanting. Often the muscular coat is absent and the diverticulum is really a hernia of the mucosa; or the serosa may be the only constituent. Such are due to pressure exerted on a weak bowel. The sac is often but not invariably situated between the layers of the mesentery, while the congenital form is situated away from it.

Hansemann<sup>10</sup> records a case in which there were 400 diverticula in the intestine, varying from the size of a hemp-seed to that of a pigeon's egg. A few were in the duodenum. On closer examination these were found to be herniæ of the mucous membrane into the sheaths of the mesenteric veins, the muscularis being absent at the point where they enter the bowel. That these points are the weak spots in the bowel can be readily proved by pouring water into the intestine to distend it when numerous little diverticula at these sites may be artificially produced. Powell White<sup>11</sup> in an article on anomalies found in the post-mortem room records a case in which there were two pouches in the duodenum, one at the side of the bile papilla.

In the present case the diverticula consisted of the serosa alone, and were clearly due to pressure acting upon the inflamed and weakened duodenal wall.

#### REFERENCES.

<sup>1</sup> Naunyn. *Treatise on Cholelithiasis*, New Syd. Soc. 1896.

<sup>2</sup> Murchison. *Diseases of Liver*, 1885.

<sup>3</sup> —. *Ibid.* p. 548.

<sup>4</sup> Jeaffreson. *Brit. Med. Jour.*, May 30th, 1868.

<sup>5</sup> Mayo Robson. *Lancet*, 1., 1897, p. 1526.

<sup>6</sup> Cruveilhier. *Traite d'anat. path.* II. p. 511.

<sup>7</sup> Oppolzer. *Zeitschr. d. Gesellsch. des Aertze in Wien.*, Nov. 1860.

<sup>8</sup> Frerichs. *Diseases of Liver*, New Syd. Soc. II, 1861.

<sup>9</sup> Charcot. *Ch. Maladies du foie*, 1877, p. 192.

<sup>10</sup> Hansemann. *Virch. Archiv. Bd. CXLIV.*

<sup>11</sup> Powell White. *Lancet*, Nov. 5th, 1893.

## Digest.

By J. C. WEBSTER, M.D.

### **Physiological and Pathological Relationships between the Female Sexual Apparatus and Other Organs of the Body.**

H. W. FREUND. "Die Beziehungen der weiblichen Geschlechtsorgane in ihren physiologischen und pathologischen Veränderungen zur anderen Organe."—*Ergebnisse der Allgemeiner Pathologie, etc.* Lubarsch and Ostertag, 1898.

#### INTRODUCTORY.

In most published works dealing with this subject, very little attention has been given to its consideration from the anatomico-physiological standpoint. P. Müller was the first to collect various scattered articles into one monograph, published in his *Handbuch* in 1888. Eisenhart, in 1895, wrote a similar comprehensive work. It has been generally believed that the main link between the genitalia and other parts of the body through which inter-relationships are established is the nervous system. As a result of Goltz's important experiment, however, many now think that the blood-stream is a more important factor than the nerve chains. (This experiment consisted in the division of the spinal cord of a bitch at the level of the first lumbar vertebra. Afterwards signs of "heat" developed and, on being covered by a dog, the bitch became pregnant; labour followed in due course, one living and two dead puppies being born. Lactation and suckling took place as in normal cases.)

It is evident that as the connection between the central nervous system and the genitalia was broken in this case, the various pelvic phenomena must have depended for their occurrence upon other agencies. Goltz suggested that the sexual phenomena during "heat" are due to the influence on the central nervous system of secretions poured into the blood stream from active cells in the genital tract. This, indeed, is the forerunner of the modern "internal secretion" hypotheses. The likelihood of the ovarian secretion being an important influence in the body is becoming more certain every day, and it is supposed by many to be the chief factor in determining the distinctive female characteristics. Virchow has said that "all the peculiar physical and psychological characteristics belonging to women depend upon the ovaries." If there be a labour centre, it must exist in the lumbar

region of the cord, judging from Goltz's experiments. Schlesinger's experiment in this direction is interesting. He divided the cervical spinal cord in a bitch, and on stimulating the sciatic nerve produced uterine contractions. There is little support for Koerner's view that a labour centre exists in the brain.

It is impossible, however, at present to state exactly what part is played either by the blood or nervous system in determining the changes brought about in the body during normal or pathological reactions between the genitalia and other parts.

W. A. Freund believes, for example, that the turgescence of the breasts in pregnancy and the puerperium is to be related entirely to blood-conditions. He thinks that the pressure of the pregnant uterus on the large vessels causes an interference with the circulation which leads to congestion in the breasts and to their increase in size. The marked development after delivery is due to the contracted condition of the uterus, whereby a large quantity of blood is forced into the general circulation.

H. W. Freund holds a similar view, explaining thereby the changes in the thyroid in pregnancy. He thinks, however, that the nervous system is an important factor. Thus by irritating the breasts of a pregnant woman with the cathode of a constant current, he started labour-pains. On the other hand by intra-uterine electrical stimulation in cases of *myoma uteri* he was not able to produce swelling of the breasts or erection of the nipples.

From the pathological standpoint also, evidence is accumulating as to the importance of the blood as the important factor in correlating the genitalia with the rest of the body. In his well-known work on chlorosis, Virchow has shown that a considerable number of cases in women are associated with defectiveness in the aortic arterial system, *e.g.*, narrowness of the lumen, thinness of vascular walls, anomalous origin of branches and irregular thickenings of the intima. Along with these conditions occurs, in a considerable number of cases, defective development in the genitalia, though in some instances an excessively well-marked development may be found. W. A. Freund has pointed out that defective circulation and heart disease are not only often associated with a general aplasia of the genitalia, but that there may sometimes be an actual arrest of development leading to a continuance of the infantile condition. H. W. Freund states that it is common to find in connection with aplasia of the genital tract imperfect development of the heart, *e.g.*, small size or patent *foramen ovale*, badly developed stomach, elongated vermiform appendix with a large opening into the cæcum, abnormalities in bladder and kidneys.

## I.—The relationships between changes in the female genital organs and the circulatory system.

### A. THE BLOOD.

1. *Physiological*.—About the state of the blood during menstruation and its relationship to body metabolism very little is known. We are better informed with regard to pregnancy and the puerperium.

Spiegelberg and Gscheidlen found that in the pregnant bitch the quantity was increased after the middle of pregnancy, all the elements being multiplied, not the watery part only.

In the human female the increase in quantity along with diminution in specific gravity has been noted by several, Nasse's work in this connection being especially valuable. This authority found that the average sp. gr. of a number of non-pregnant women was 1055.3. In 67 pregnant women at the beginning of the sixth month it was 1052, at the end of the eighth month 1049.7, in the ninth month 1051.3. In 10 women in labour it was 1053.3. The sp. gr. of the blood-serum was also diminished in pregnancy, due to the diminution of albumen. Becquerel and Rodier calculate the increase of the watery element to be 7-10 per mille.

Andral and Gavaret have stated that in the first six months the fibrin elements diminish, but later, especially in the last month, increase considerably. Nasse in an important research has endeavoured to explain this by showing that the increment is made up from degenerated white blood-corpuscles, which are also increased in pregnancy. He has also shown that there is a diminution in the saline elements and hæmoglobin, and an increase of fat. Nasse regards the blood changes as dependant upon the increased metabolism in the body, this being related to a diminution in activity of the sympathetic nervous system.

The diminution of red blood-corpuscles and hæmoglobin during pregnancy is well recognised.

The pulse is not influenced by pregnancy, the sphygmograph detecting nothing abnormal. R. Barnes has, however, stated that the rate is diminished. He and F. Barnes have tried to show that there is increased arterial tension.

The influence of labour on the condition of the blood is not easy to understand. The sp. gr. of the blood serum remains normal, the fibrin element increases, the hæmatin is greater, the red blood-corpuscles decrease in number. That the blood-pressure is increased seems certain. After labour the latter falls; it is especially low on the third day. Barnes states that in febrile conditions in the puerperium, vascular tension increases; Lebedeff disputes this. An increase in

blood pressure in the early days of the puerperium is rare. This is noted, however, when the woman first rises.

The red blood-corpuscles increase rapidly after labour, especially during the first three days, so that after a couple of weeks they are more numerous than in pregnancy. The characteristic feature of the pulse in the puerperium is its slowness: the cause of this is unknown.

2. *Pathological.*—Chlorosis and anæmia are important in their relationship to the sexual organs. Mention has already been made of Virchow's work which showed that a number of chlorosis cases presented abnormalities of the heart and vascular system, with which were associated aplasia of the genital organs, or sometimes excessive development. The chief feature of chlorosis is deficiency in the blood especially aplasia of the red corpuscles.

In the cases to which Virchow has called attention, where the physical conditions are congenital, there may be few or no symptoms until puberty; then the chlorotic features may become suddenly or markedly established. Afterwards there tends often to be an exacerbation of symptoms in connection with altered sexual conditions, *e. g.*, menstruation, puerperium, etc. Cases of acquired chlorosis are most frequently met with at the time of puberty. Von Niemeyer believes that prematurity of puberty is an important cause. He states that it was of constant occurrence in girls in whom menstruation developed early before the breasts or pubic hairs had become prominent.

The special association of chlorosis with menstruation, pregnancy, the puerperium or the lactation-period has been often remarked. In this connection, however, must be remembered the normal thinning of the blood in pregnancy. Von Noordens regards chlorosis as a disturbance of the blood-forming organs resulting from some weakening of the influence of the ovaries, which, he says, act in stimulating blood-formation. Such a view would be somewhat in keeping with the theory of the value of ovarian secretion, but it could scarcely apply to the Virchow group of cases.

The menstrual phenomena vary greatly in chlorosis. Schulze found in 165 cases only five in which menstruation was normal; in four it had never been present; in seven it had been regular, but had become irregular; in three it was profuse and too frequent; in ten there was complete amenorrhœa; in the majority it was scanty and irregular. The explanation of these differences is probably to be found in the varying relationships of the genitalia to the factors causing the chlorosis. Thus, if aplasia of the sexual apparatus and of the main-vascular trunks be often found together it is not surprising that scanty and irregular menstruation should be found in so many cases.

Leucorrhœa of a non-inflammatory nature is very common in chlorosis. In amenorrhœa it may sometimes be regarded as a kind of substitute for menstruation.

In some cases it is of a catarrhal origin, for in chlorosis a catarrhal process may occur in different parts, especially in the bowel.

The following aplasic changes may be found in the pelvis in chlorosis:—Kyphotic or justo-minor bony pelvis, associated with deformed spine; thin mons veneris and labia; small vagina with very wrinkled walls; small thin-walled uterus with narrow cavity; small ovaries and tortuous tubes; persistent urachus; small rectum. Excessive menstruation with chlorosis is probably found in those cases in which there is excessive development of the sexual apparatus (Trousseau's "Menorrhagische Chlorose"); the ovaries are especially enlarged.

The influence on the blood of pelvic tumours, *e. g.*, ovarian, is not thought to be more marked than in the direction of causing leucocytosis. Kopp found this constant in a number of cases of simple and malignant growths, but not where the growths were of tubercular origin. Variations occur in chlorosis relating to sterility. Conception may occur, but very often it does not. Probably most of the latter cases are those in which genital aplasia is found.

Pregnancy usually leads to an increase of the chlorotic symptoms. Sometimes it may cause abortion, probably owing to death of the ovum from imperfect nutrition, but, of course, other causes may be present.

Labour pains are not apparently altered. Bad post-partum hæmorrhage may, however, be met with.

Marked anæmia or even pernicious anæmia may develop in pregnancy without apparent cause; the trouble tends to increase as pregnancy advances. In 25 cases described by M. Gracfe, only one was cured, two became somewhat better after labour, but most died within ten months of the beginning of the illness. P. Müller has reported three cases of recovery.

Pregnancy may be interrupted, possibly by the action of the excessive carbonic acid in the blood on the labour centre. P. Müller has described a case in which death occurred on the sixth day of the puerperium; fatty heart and liver were found and ulceration in jejunum, rectum and descending colon.

An ordinary anæmia may take on a pernicious character during pregnancy. Indeed pregnancy is the most important causal factor in pernicious anæmia. Multiparæ are more apt to be subjects than nulliparæ. Most deaths occur after labour, one-half taking place within five months. It is rare that life lasts for two years. P. Müller believes that the lactation-period is a prominent causal factor.



Leucocythæmia is a condition which may be started in pregnancy. According to Vidal this is so in 40 per cent. of cases. The early symptoms develop towards the end of pregnancy or in the puerperium. The influence of pregnancy, labour and the puerperium on the course of a leucocythæmia appears to be slight.

Hæmophilia, a rarer condition in women than in men, may develop in pregnancy. Virchow believes that many of these cases, like those of hæmorrhagic chlorosis are explained by the increased blood-pressure associated with deficient arterial capacity. Schönlein states that in cases of hæmophilia, menstruation develops early. This is only occasionally so, but when the process is established the bleeding tends to be sometimes profuse. Usually, however, menstruation runs a normal course. A protracted climacterium, marked by profuse bleedings is not rare. Very little is known as to the influence of hæmophilia on the course of pregnancy. A tendency to abortion has been described by some observers. There may be, however, very bad post-partum hæmorrhages.

*Scorbutus* (purpura hæmorrhagica, morbus maculosus *Werlhofii*, hæmorrhagic diathesis) is often associated with early menstruation or with a prolonged duration. It may cause severe post-partum bleeding, not to speak of hæmorrhage from other parts of the body. Philips states that abortion and premature labour are common. The condition usually lasts throughout pregnancy, though cure may take place before it is ended.

Virchow states that in the post-mortem examinations of cases of the hæmorrhagic diathesis, he has found the diminished arterial capacity as in cases of hæmophilia.

## B. THE HEART.

1. *Physiological*.—That the heart hypertrophies during pregnancy is now well-established, having been first of all most accurately determined by W. Müller's careful researches. The increase is more marked in the left than in the right part of the organ.

Duroziez states, as a result of the examination of many pregnant women, that the heart is larger in those who have had a good many children than in those who have borne only one or two. Gerhardt declares, however, that these results, obtained by percussion, are not to be trusted, owing to the displacement of the heart resulting from the abdominal swelling. W. Müller regards the increase in the heart as due to the increased vascular area in the pelvic organs containing an increased quantity of blood. Cohnstein regards the thinning of the blood as the chief cause, bringing about changes similar to those found

in many cases of chlorosis. Lahs insists upon the importance of the abdominal distension compressing the vessels and thus somewhat interfering with the blood-flow. That the action is a mechanical one, in the main, at least, is likely from the fact that the hypertrophy is most marked in the left ventricle. Besides hypertrophy there is also some dilatation. Fitsch points out that this is marked in both halves of the organ. The changed condition of heart affects the pulse.

Graves has pointed out that alteration of bodily position in cardiac hypertrophy is not associated with any alteration of the heart-beat. Similarly, Jarissenne states that in pregnancy the pulse rate remains the same in all positions of the body and he regards this as a sign even of early pregnancy.

Löhlein states that heart murmurs are found in 68 per cent. of lying-in women, Fritsch in 75 per cent. They are usually heard as soft or blowing in character, systolic, and heard at the base or apex. They usually disappear in the second week of the puerperium.

2. *Pathological.*—Disturbances of the sexual system may bring about cardiac symptoms, without inducing any organic changes. The well-recognised "palpitation," while often developed reflexly through the nervous system, is in many cases due to the influence of altered blood and circulation, conditions resulting from abnormal ovarian secretion.

Clément has classed these cardiac disorders of the climacterium under the term "*Cardiopathie de la ménopause*;" they include palpitation, pallor of skin, œdema of the lower extremities, dyspnœa, fainting, and chest pains.

This author regards them as due to reflex nervous influences stimulating the acceleratory fibres of the heart. Freund discards this view in the light of Goltz's experiments.

In *myoma uteri* similar cardiac disturbances are met with especially in conditions in which the patient becomes anæmic; here undoubtedly the increased size of the uterus has some influence analogous to that of pregnancy. C. Hennig has reported several cases in which the cardiac symptoms disappeared after shrinkage or disappearance of the myoma.

*Endocarditis* is of the greatest importance in relation to changes in the sexual apparatus. Pregnancy and the puerperium are states which may undoubtedly influence the development of endocardial trouble, especially in the valves. In pregnancy these are the factors of dilatation and hypertrophy and continual increase of resistance in the blood-current. Indeed, without other factors, congenital or acquired, *e. g.*, infective agencies, it is not difficult to believe in the

development of a true "Pregnancy Endocarditis." Should such factors come into operation it is all the more easy for this grave condition to start. Among these factors are to be included vascular aplasia as described by Virchow. It is doubtful if a rheumatic endocarditis occurs in the lying-in woman. At least, it occurs but rarely. Exposure to cold is but seldom succeeded by endocarditis.

Ollivier has recorded three cases of the disease in lying-in women, in which no causal condition could be established save the systemic changes associated with the puerperal state *e. g.*, hyperinosis of the blood. According to this author the mitral valve is mostly affected. In pregnancy trouble is especially apt to occur in the second half of pregnancy.

The change which occurs in the valves is at first generally a parenchymatous one; this is followed by the deposition of fibrin on the surface which may form verrucose and polypoidal masses. There is little tendency to fibrous thickening or sclerosis in the valve, but rather ulceration, softening and breaking-down. In this way embolism is very common especially in kidneys, spleen and in the choroid and retina of the eye.

The infectious form of puerperal endocarditis is caused by organisms which enter the system by the genital tract and is usually found along with infective processes in the pelvic organs. When associated with the diphtheritic and phlegmonous forms of pelvic inflammation, there is a marked tendency to embolic changes accompanying the valvular disease.

Virchow has published a very complete account of a case of puerperal ulcerative endocarditis. The *sectio* was made 45 days *post-partum*. On one of the flaps of the mitral valve was a perforating ulcer with ragged edges, containing badly staining tissue showing fatty degeneration, and thrombotic particles. There were excrescences on the neighbouring endocardium and *cordæ tendineæ*. Hæmorrhagic infarcts and abscesses were found in spleen and kidneys. In the valvular ulcer, myocarditic areas and embolic masses were found, felted masses of fine threads, consisting of low fungoid organisms (Pilzkolonien). This was the first case of ulcerative endocarditis in which the demonstration of the causal organisms was made. It has been shown that the organisms are in most cases streptococci, though staphylococci and the pneumonia-diplococci may sometimes be the active agents.

The Berlin Pathological Institute publishes the following statistics regarding endocarditis in the lying-in woman for the years 1865-1876. There were 63 cases (18 per cent. of all the autopsies made in lying-in

women; 85 per cent. were acute cases. The verrucose form was the most common; the ulcerative was found in 17 per cent. of the cases; the mitral valve was most frequently affected; the left side of the heart far more often than the right; simultaneous joint affections were found in five cases. Parasitic action was found in 60 per cent.; in 40 per cent. there were no infectious processes in other organs; parenchymatous nephritis was found in 56 per cent. Embolism was very frequent. In 11 ulcerative cases it was constantly present.

Old standing valvular disease is very apt to become worse as a result of pregnancy. The vegetations on the valves tend to grow larger and new ones to be formed. In girls with this disease the onset of menstruation tends to be delayed. Duroziez has described 27 cases in which the age of commencement varied from 17 to 23. When heart-compensation is well established the process is usually normal. In mitral disease it may be profuse. When compensation is disturbed, menorrhagia and metrorrhagia may be present.

In aortic disease the flow is irregular only in advanced stages; it is not usually profuse. Amenorrhœa is rare save when the system is much worn and exhausted.

Endocarditis does not seem to interfere with conception. The influence of the disease on the state and course of pregnancy is not a certain or constant one.

There is undoubtedly a tendency to premature expulsion of the ovum, following irregular heart-action, congestion in the pelvic vessels especially in the uterine, and disturbances of respiration. The direct factors are stimulation of the labour centre by excessive carbonic acid in the blood, hæmorrhage in the decidua or placenta. Old statistics regarding the frequency of premature delivery are not reliable, owing to the small number of cases referred to. Thus Peter refers to 36 cases, in which 17 abortions and 12 premature births occurred; Duroziez found 21 abortions among 41 cases.

P. Müller, however, from a comprehensive study states that one-fourth of the pregnancies do not go to full term. Hæmorrhages during pregnancy have been described as frequent by Duroziez, but not by other authors.

Endocarditis *per se* does not seem to influence the uterine contractions during labour. Loss of blood producing atony is very rare. Danger is due to cardiac insufficiency and is greatest in or immediately at the end of the third stage. The puerperium may often run a perfectly normal course.

The influence of child-bearing on the course of an endocarditis is not a constant or certain one. Lebert, Spiegelberg, Macdonald and

Hart have emphasized the danger of marriage to a woman with this disease. Middleton, Vinary and Gow have, however, collected a considerable number of cases where patients suffered in no exceptional manner.

Leyden states that at least one-fifth of all cases have a fatal end soon after labour. There can be no doubt that all the conditions introduced by pregnancy tend to make the state of the diseased valves worse.

Death in pregnancy is rare. The danger-period is at the end of the labour and in the course of the puerperium. It is easy to understand how the endocarditis itself along with the increased circulation, the elevated diaphragm, the respiration difficulties present during pregnancy, lead to after-trouble, *e. g.*, dropsies, degeneration of heart-muscle, œdema of the lungs and to secondary nephritis.

Labour introduces increased mechanical difficulties in the shape of alterations in blood-pressure accompanying the action of the uterus and accessory powers. Death, however, during labour is rare. When it occurs it is probably due to over-distension of the right auricle.

The chief danger of the post-partum period, according to Fritsch and others is due to the great alteration in intra-abdominal pressure whereby the enlarged heart is left with too little blood which is mainly in the abdominal vessels.

Mitral stenosis is the most dangerous valvular disease and often leads to death immediately after labour. Berry Hart reports eight cases in which seven deaths occurred. With the various forms of endocarditis it is important to remember that an important complication is usually present in an altered myocardium. Pregnancy and the puerperium strongly predispose to degeneracy in the heart-muscle. The hypertrophy of the former state is followed by an involution in the latter.

What the latter process is, is not definitely known. It corresponds to what takes place in the uterus in the puerperium.

In puerperal septic processes, myocarditis is very apt to occur with or without ulcerative endocarditis. Sometimes the heart is affected in this way without any septic changes in other parts.

Brown atrophy of the heart-muscle has been described as an important form of degeneration in the myocardium, especially by Curbelo and Hofmeier. This atrophy is especially apt to occur in conditions leading to prolonged and excessive heart action. Thus it may be found in cases of large fibroids, especially of the hard variety and of large ovarian tumours. (In the former the prolonged use of ergot has been blamed for the degeneration, but it may occur where this drug is not used).

Fatty degeneration of cardiac muscle is more common than brown atrophy. This may follow an endocarditis or may be part of a septic process. But it seems also to be associated with a similar change in other organs which is found in connection with pregnancy and the puerperium *e. g.*, in skin, breasts, muscles, pelvic cellular tissue, vessels, etc. Virchow was the first to suggest the physiological nature of fatty change in the heart in connection with the puerperium.

Marked fatty degeneration is apt to be induced in prolonged or difficult labours, chloroform anæsthesia, febrile or infective states and excessive blood-loss. Hauber found in *post-mortems* of such cases acute myocarditis, with fatty changes and interfibrillar deposition of pigment. This author states that heart-degeneration follows upon prolonged abortions or other conditions leading to loss of blood and anæmia.

In connection, also, with ectopic gestation a degenerated myocardium may be found.

Sometimes in cases of sudden death in the puerperium, fatty degeneration of the heart may alone be found to account for it. P. Müller Philipps, McClintock and others have described instances of this.

In long-standing large fibroids of the uterus, fatty as well as brown atrophy of the myocardium is met with. There is much less tendency to these changes in ovarian tumours. But it is important to note as Fenwick has pointed out that all large abdominal swellings by interfering with the lungs and leading to imperfect oxygenation in the blood tend to cause fatty degeneration in various organs. This author describes 16 cases of ovarian tumours in which death occurred suddenly, fatty degeneration of the heart, being apparently the cause.

A number of authors have found the same cause in cases of death in fibroids, especially after operations, and as Hofmeier states it is likely that cardiac degeneration is the cause of many post-operative deaths which are attributed to "shock."

One striking condition in emphasizing the close relationship between the genital tract and the circulation is embolism of the pulmonary artery. This is a very dangerous occurrence and is usually fatal. The changes in the blood as a result of pregnancy undoubtedly explain the formation of the embolus.

These changes are of more importance in this connection than the difficulties of circulation in pregnancy, dilatation of large veins, thrombus-formation at the placental site or changes in blood-pressure. Heart disease and degeneration greatly increase the risk of embolism. Lebert has emphasized the special tendency to this condition in the second-half of pregnancy. Playfair and others have mentioned the

occurrence of thrombosis in the right side of the heart, but this is not clearly established.

In certain diseased conditions of the genital tract, there is also a change in the blood disposing to embolism, especially in prolonged troubles leading to impoverishment of blood *e. g.*, long-standing increasing myoma uteri, ovarian tumour, old and marked displacements of the uterus, and conditions associated with extensive adhesion-formation. In this connection must also be considered operative procedures, anæsthesia, rough manipulations, as causal factors.

Of all the causes of embolism, no matter in what conditions, infective processes are the most important. A marked example of this form is the multiple embolic changes found in the pyemic form of puerperal sepsis.

A special form of embolism viz., air-embolism must also be considered. This may be caused during manipulations in the genital tract during labour. The air enters the circulation through a vessel in the placental area in most cases and is most likely to occur in placenta prævia. It has been described, also, in connection with abortion.

Another form is fat-embolism, which may occur in pregnancy, but chiefly in labour or sometimes soon afterwards. Virchow was the first to show that in eclampsia death may be due to fat-embolism in the lungs. He found the same process in the kidneys and occasionally in the brain. The fat probably comes from the liver, possibly from bone-marrow; it may, however, originate in the subcutaneous cellular tissue which in the convulsions of eclampsia may suffer contusion. The tendency to fatty changes in pregnancy, already alluded to, should be remembered in this connection. As regards the liver as a source of the emboli, it is not hard to understand how it might be forced into the thin-walled hepatic veins. The uterus also may be a source, for fatty material could easily pass into the sinuses as a result of uterine contractions or manipulations.

(To be continued.)

# RETROSPECT OF CURRENT LITERATURE.

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## Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

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### **The Use of Egg Membrane in Trephining Operations upon the Skull.**

FREEMAN. "The use of egg membrane in trephining operations upon the skull."—*Annals of Surgery*, October, 1898.

The development of cicatricial tissue and the formation of adhesions have been among the unfortunate sequelæ of operation upon the brain and its membranes. Keen suggested the inversion into the trephine opening of a pedunculated flap of periosteum obtained from the adjacent surface of the skull. The manœuvre, although ingenious, is troublesome and not altogether satisfactory.

The most popular method consists in the introduction of some foreign substance, such as gold foil or rubber tissue, but observation has shown that both of these materials may become surrounded by connective tissue, which give rise to more extensive adhesions than would otherwise have occurred. Even the heavier varieties of foil are apt to crack and break into smaller pieces. Rubber tissue also becomes disintegrated. The lining membrane of an egg is exceedingly tough and compact. It is so remarkably durable that it has been employed to close perforations in the tympanum, where it often remains intact for months.

Freeman has tested its efficiency by two reported experiments. He assumed that in a fresh egg the membrane would be sufficiently aseptic.

In his first experiment a trephine opening was made in the skull of a dog, the membrane cut away and the brain lacerated. A newly laid hen's egg was scrubbed and sterilized in bichloride of mercury. The shell was then cracked and peeled from the underlying membrane over a sufficiently large area. A portion of egg membrane was



removed with sharp pointed scissors, and inserted in the opening, the scalp being closed above it. Five weeks after the operation the animal was killed, when the egg membrane was found to have remained intact, in spite of the fact that the dog had infected the wound by scratching. A second experiment, similar in detail, was performed upon a rabbit. The animal was killed and the parts carefully examined at the end of two months. There was absolutely no adhesion of the scalp, even the deep fascia being freely movable over the trephine opening. The brain which presented a yellowish nodule at the point where it had been freely lacerated, was smooth and non-adherent, except by a few delicate adhesions round the edge of what had been the opening in the dura. There was no deposit of cicatricial tissue anywhere about the site of the operation.

#### **Removal of Biliary Calculi from the Common Duct by the Duodenal Route.**

MCBURNEY. "Removal of biliary calculi from the common duct by the duodenal route."—*Annals of Surgery*, October, 1898.

Dr. McBurney has performed this operation six times and is well satisfied with the results.

When a stone is situated at the extreme lower end of the passage, and when it cannot be dislodged to a place higher up in the duct, its removal without opening the intestine is a matter of great difficulty and not a little danger. The only objection to this method is the fact that the intestine must be incised. On the other hand it is now well-known with what rapidity and perfection properly sutured intestinal wounds heal. Dr. McBurney has found no difficulty in finding the opening of the duct and in dilating it sufficiently to remove the stone. It has also the advantage that, by the introduction of a probe, the bile duct can be examined for a long distance upward toward the liver, and also the orifice of the duct having been dilated to a large extent, there is far less likelihood that over-looked fragments of gall-stone, granular material, or thick bile will be retained and give rise to further obstruction.

#### **Tetanus.**

MIXTER. "Tetanus."—*Boston Medical and Surgical Journal*, October 6, 1898.

Dr. Mixter reports a case of tetanus occurring in a boy eleven years of age. While walking in the woods he cut his foot on a piece of broken bottle. Free bleeding ensued and the wound was dressed by a physician. Eight days later he complained of pain across the

shoulders, and later in the day of a similar pain in the side of the neck, preventing chewing but not swallowing. On the 10th day after the accident he was admitted to the Massachusetts General Hospital. While being examined he had two tetanic spasms.

The main points of interest in the case are that during the following twelve days he was given 3,400 cc. of Gibier's tetanus antitoxin. On the second day of his stay he was given 540 cc. of serum injected deep into the thigh muscles, in divided doses, and on several subsequent occasions 480 cc. were injected at one time. Anæsthetics were often required to control the convulsions. Chloroform was found too depressing to the already over worked heart and ether was found to be more satisfactory. The boy recovered.

It would seem from this case that large doses may succeed when smaller doses fail.

Evidence is accumulating which shows that it is good practice to administer an inhibitory dose in the case of wounds likely to be followed by tetanus. This is at present the routine plan adopted in the Montreal General Hospital. Of course, if tetanus does not develop subsequently, it can not be said that the serum prohibited, but in some cases, for instance, street car injuries with street dirt deeply imbedded in the torn tissues, cases in which tetanus does not infrequently follow the subsequent course of the case after a protective or immunising dose of the tetanus antitoxin, has been satisfactory. The latest researches into the poison of tetanus go to show that it forms with the nerves an indissoluble union, probably a chemical union, and that this union can hardly be broken. The tetanus antitoxin is capable of neutralising any tetanus poison, which is free in the system, that after it has united with the nerves, the antitoxin is incapable of separating the union formed. If these views are correct, they would explain the much greater efficiency of protective than curative doses, and clinical experience harmonizes with this theory.

The antitoxin should be given hypodermically, because it is not absorbed when administered by the mouth or rectum. It is advisable to heat it to 1° F. above the rectal temperature before administering it.

#### **Les Tumeurs du Foie.**

TESSIER ET AUVRAY. "Les tumeurs du foie."—*Revue de Chirurgie*, 10 septembre, 1898.

In this paper are reported 40 cases of tumours of the liver treated surgically. It is the concluding article of a series which has appeared, but which cannot be profitably reproduced without the illustrations. The conclusions arrived at are as follows:

Of the 40 cases two were treated by establishing a palliative fistula, through the gall-bladder, to relieve symptoms due to pressure of the tumour upon the ducts. Relief of pain and subsidence of fever followed the operative interference in one case and the patient lived three months, the other patient died of shock.

In 38 cases complete operation was performed. The lesions were : 4 sarcomas ; 7 carcinomas, considered to be primary ; 1 carcinoma, secondary ; 6 adenomas ; 4 angiomas ; 3 tumours, the nature being undetermined ; 9 gummata ; 4 non-parasitic cysts.

Of these 38 operations, 32 recovered and 6 died from the operation.

The cause of death in the 6 fatal cases was hæmorrhage, septic infection and shock. Increased experience and an improved technique may be expected to lessen the number of deaths from operation.

In regard to ultimate results, the benign cases gave most favourable after-histories.

The malignant tumour, after a respite of a few months, recurred.

After resection of a portion of the liver, the cut surface quickly becomes adherent to the omentum and neighbouring organs, chiefly the stomach and duodenum.

Ponfick found in experiments upon animals that the liver soon regained its normal size and weight. There seemed to be a regeneration of liver cells.

*Geo. E. Armstrong.*

# Gynecology.

UNDER THE CHARGE OF F. A. L. LOCKHART AND J. C. WEBSTER.

## Effect of Gynæcological Troubles upon the Nervous System.

CURRIER, A. F. "Clinical phenomena relating to the nervous system in connection with diseases of the pelvic organs."—*Amer. Gyn. and Obstet. Journal*, July, 1898.

Robt. Lee demonstrated by dissection that the uterine nerves enlarge during pregnancy in spite of the contrary opinions held by both of the Hunters. The female genitals are abundantly supplied with nerves from the sympathetic system which is connected to the cerebro-spinal nerves by branches. The sympathetic centre for the uterus is in the aortic plexus, from which is derived the hypogastric which sends branches to the bladder, uterus and vagina, and, by its connections, to the descending colon, sigmoid flexure and rectum. The centre for the ovaries and tubes is in the spermatic plexus, which arises from the aortic and is connected with the renal. Through this, it is connected with the solar plexus and thus to the heart, lungs and stomach. Having shown the intimate relationship between the sexual organs and those of the alimentary, cardiac, respiratory and other systems, it is easy to understand how organic disease of one may produce symptomatic effects in the other, as is seen in the dyspepsia which so often accompanies disease of the genital tract. Other influences may aid the genital disease in producing these symptoms, as for instance, the various habits, *i. e.*, alcoholic, drug, etc., unusual occurrences etc., and the difficulty of deciding which exerts the most powerful influence is often great, while, on account of the intimate nervous relation between the genital organs and the rest of the body, temporary "disturbance of mental equilibrium" not unfrequently follows operations upon the uterus and appendages, cases of post-operative actual insanity are very rare, Tait only finding seven such results in 7,000 gynæcological patients, while the writer himself had only been able to discover 355 cases in the medical literature of the last 20 years.

## Treatment of Ectopic Gestation.

HAGGARD, W. D. Jr. "Vaginal incision and drainage in certain cases of ruptured ectopic gestation."—*Amer. Gyn. and Obstet. Jour.*, July, 1898.

The majority of cases of ruptured ectopic gestation are best attacked

through the abdomen but there is a class of cases which can be more advantageously treated through the vagina, viz., all cases of encysted hæmatocele. Here, the blood has, in the vast majority of cases (for the existence of extra-peritoneal hæmatocele is doubted by many) been poured out into the abdominal cavity where it has become changed, being covered in above by the intestines and omentum, as well as by a layer of semi-organised blood-clot. He agrees with Henroten that "if the tumour is low down, go at it from below; if high up, go at it from above." He diagnoses encysted intraperitoneal hæmatocele from the extra-peritoneal variety by its being smaller, situated to one side and the absence of any sign of peritoneal inflammation, but he acknowledges that *this attempted differentiation is only a pedantic refinement that is impracticable and immaterial. The treatment of both is identical.*

#### **Uterine Hæmorrhage.**

DUNNING, W. L. "Menorrhagia and metrorrhagia as symptoms."  
—*Amer. Gyn. and Obstet. Jour.*, Sept. 1898.

Among the local causes are: 1st. Inflammatory conditions of the uterus and appendages. 2nd. Obstruction to the venous flow. 3rd. Diseases of the endometrium. 4th. Fibro-myomata. 5th. Malignant disease. 6th. Placenta prævia. 7th. Abortion. 8th. Extra-uterine pregnancy. When due to inflammation of the pelvic organs, pain is a constant symptom and is severe or not according as to whether the inflammation is acute or chronic. Where displacement of these organs causes obstruction to the venous current the patient usually has a dull ache. Primary cancer of the fundus uteri may have no symptom but hæmorrhage for a long time, so that if the patient is between the ages of 40 and 60 special care in the examination should be exercised. In three years, the writer met with four cases of ectopic gestation, and in each case the patient sought advice on account of constant hæmorrhage. In diagnosing the cause of the hæmorrhage one must be guided to a great extent by the examination of the patient herself, as the history is merely an adjunct to the physical examination.

#### **The Use of Saline Solutions.**

HANKS, HORACE T. "Intra-venous injections of normal saline solutions."—*Amer. Gyn. and Obstet. Jour.*, Sept. 1898.

Death after severe accidents and operations is due either to loss of blood, traumatism, sepsis, obstruction of the bowel or suppression of urine. Shock follows severe traumatism, which cannot be avoided

where there are adhesions of the parts, nerves are injured or large masses of tissue removed. Where major operations are about to be performed, the patients receive ʒi-ii of whiskey in water every hour for six hours before operating. Two hours before operation, ʒi-ii of whiskey in ʒiv of warm normal saline solution are inserted high up in the bowel per rectum, a little tinct. opii being added when indicated. By this means shock is prevented, and the patient recovers more completely and quickly from the ether. When the patient has lost much blood, intra-venous injections of normal saline solution at a temperature of 115° F., are given. The amount used is from one to three pints but one is able to tell when enough has been used by watching the pulse and injecting until it has regained the required tension. The rectum should be employed as a receptacle for the saline up to the limit of its absorptive power whenever possible, and post-operative renal congestion may be relieved by this means. This normal saline solution is composed of 90 grains of pure chloride of sodium dissolved in 33½ ounces of distilled water. Septicæmia is among the other indications for the use of the normal saline solution.

#### Cystocele.

ROUTH, AMAND. "The treatment of cystocele."—*Brit. Medical Jour.*, Sept. 17th, 1898.

In this article, the writer describes a new operation for cystocele for which he claims results superior to those obtained by the usual operations for the relief of that condition. A transverse incision through the vaginal mucous membrane just below the cervix allows the bladder to be stripped off both the cervix and uterus. It is then also dissected off the anterior vaginal wall which is then divided usually from centre of the first incision to near the orifice of the urethra. The margins of this vertical incision are made to overlap and the redundant tissue removed along both the transverse and vertical incisions. The raw edges are then united. Where the uterus is retroverted, it can be brought forward and stitched to the anterior vaginal wall.

In the subsequent discussion of this paper, Saenger, of Leipzig, stated that he had been performing this operation for the last eight years. When the cervix was elongated, he performed a high amputation. Usually in cases of cystocele the perineum was lacerated, in which case he repaired it by a colpo-perineorrhaphy. The operation for this latter was a high flap-splitting one, the great objection to Emmett's perineorrhaphy being that he did not go high enough.

Fehling, of Halle, had seen bad relapses of procidentia follow high

amputation of the cervix and considered that the uterus should be maintained in position by ventral or vaginal fixation, accompanied by plastic operation on the vaginal walls.

### Conservative Gynæcology.

MARTIN, CHRISTOPHER, (Birmingham). "On the conservative surgery of the ovary."—*Brit. Med. Jour.*, Sept. 17th, 1898.

If the whole of both ovaries be removed, the woman becomes sterile, menstruation ceases in about 95 per cent. of the cases, the genitals atrophy, neuroses of the menopause appear, sexual instincts cease or diminish, and there is a tendency to obesity. But if one or even a very small part of one ovary be left the above conditions are avoided, so we should endeavour to leave at least part of one ovary when possible, except where you desire to induce a premature menopause, when, of course, the whole of both ovaries should be removed. Again, in sarcoma of one ovary, the other should be removed, as there is a marked tendency for it to be affected later on. Where there is double pyosalpinx, the writer removes the uterus and tubes per vaginam, but tries to leave one or both ovaries unless they also are diseased. In all cases of fibroma of the ovary, observed by Dr. Martin, the glandular portion was spread out over the fibroid, so that by stripping off and leaving some of this capsule, one can avoid the occurrence of the premature menopause. He recommends ignipuncture through a vaginal section for the cure of chronic and cystic ovaritis, and has cured seven out of fourteen cases treated by this method. In three out of fifteen, the ovaries subsequently had to be removed. In an early case of par-ovarian cyst, the ovary can usually be left.

F. A. L. Lockhart.

# Pathology.

UNDER THE CHARGE OF J. G. ADAMI.

## On the Constitutional Effects of Superficial Burns.

BARDEEN C. RUSSELL, M.D. "A Review of the Pathology of Superficial Burns with a Contribution to our Knowledge of the Pathological Changes in the Organs in Cases of Rapidly Fatal Burns." *Johns Hopkins Hospital Reports*: Vol. VII., No. 3, pp. 137. 1898.

This is another of the admirable and most valuable Reports from the Pathological Laboratory of the Johns Hopkins Hospital, and will certainly rank as one of the essential monographs upon the subject of burns and their effects, not only because it gives in an excellent manner the history of the development of our knowledge of the subject together with a very full bibliography, but also because it materially advances our knowledge of the means whereby superficial burns become the cause of death.

Many have been the theories to explain rapid death after burns. In 1823, Cumin pointed out the extreme congestion of the various serous membranes, and in 1884 and 1885, Schjerning studying some 200 autopsies, found that hyperæmia of the brain occurred in 29%; hyperæmia of the lungs in 36%; nephritis, 28.2%; pneumonia, 27%; hyperæmia of the intestines, 22.2% (40% where death occurred within 48 hours); pleurisy, 18.8%; duodenal ulcer, 12.4% (after 48 hours); meningitis, 10.5%. He also showed that hyperæmia of the brain was most frequent where death occurred within 48 hours, while nephritis occurred in 20% of the cases dying within two days, in 50% of those dying within four weeks; 75% of those dying within five weeks, and 100% of those dying within 12 weeks. Pneumonia also became more frequent the longer the period of survival after the accident, while hyperæmia of the intestines like that of the brain was most marked in the rapidly fatal cases, and was rarely noticed where death occurred after two weeks.

Naturally the first explanations to be given of the fatal effects of superficial burns, were based upon disturbances of the functions of the skin. Now the skin is an organ of many functions: respiration, excretion, temperature regulation, sensation and protection. Thus there have been (a) those who, like Heyfelder, dwelt upon the loss of the respiratory function of the skin; (b) those again, like Curling, who held the theory that the retention of normal sweat products threw extra work upon the abdominal organs, and thus produced the serious consequences. This theory appeared to gain support from the fact that varnishing the skin



has results not unlike those produced by burns. (c) Laschkewitsch and others laid stress upon the loss of the heat regulating function of the skin. It has been shown in animals with fatal burns that the temperature after a preliminary rise sinks below the normal; Horricks has reported a similar fall in man. (d) Kuess again has attributed the severe symptoms to the destruction of the sensory end-organs, while many others have pointed out the prominent part played by shock, overstimulus of the vasomotor reflexes and severe nervous disturbance. Sonnenburg is one of the most recent writers upon this subject, and holds that death occurring soon after the injury is due mainly to the reflex lowering of the vascular tonus.

All these theories would, however, not seem to be adequate to explain all the morbid changes observable. Thus (a) the total carbon dioxide eliminated by the skin is usually less than  $\frac{1}{5}$  part of that eliminated by the lungs, so that the extra amount of respiratory work thrown upon the lungs after burns, can easily be borne by them. Then again (b) the kidneys can easily eliminate the amount of water, ordinarily passing off as sweat. Experimental studies on the gilding of animals, as pointed out by Bardeen, do not tend to substantiate the view that the main harm done directly by superficial burns consists in the stopping of the excretory function of the skin in the burned area. Against the theory (c) that death is due mainly to loss of the heat regulating function, Welti has shown that the animals die in spite of being protected against heat depression, and that even when so protected, the temperature undergoes a lowering.

Not to enter now more fully into the subject of the work done by previous observers and the theories brought forward by them, we would pass on to discuss Dr. Bardeen's results.

It so happened that five children were brought to the Johns Hopkins Hospital who were so severely burned that they survived only a few hours. The autopsies were made without delay, and even where death had occurred under four hours after the injury, the evidences of alteration in the internal organs were so striking that a detailed study of the cases was undertaken. The burns varied considerably in degree, there was marked œdema in the subcutaneous tissue, especially about the face and eyelids, but in none of the five cases was there charring. The pleuræ were found normal; the lungs slightly congested and œdematous; the thymus was congested and the mediastinal lymph glands swollen and somewhat slightly congested. In the abdomen the visceral peritoneum was slightly congested, but there was no excessive fluid in the cavity, the liver was pale and cloudy, the spleen enlarged with prominent Malpighian bodies; kidneys showed cloudy cortex; the lymph follicles of the stomach and intestines were markedly swollen throughout as were also the abdominal lymphatic glands.

Thus to sum up, the chief gross pathological changes were, cloudy

swelling of the liver and kidney, softened and enlarged spleen, and above all, swollen lymphatic glands and gastro-intestinal lymph follicles; the hyperæmia of the thoracic and abdominal organs, was moderate. In the blood, examined in a fresh state, the most striking change was a considerable fragmentation of the red corpuscles, while many cells containing fragments of red corpuscles were seen in the spleen, and some in the liver; thrombi, except in the skin, were uncommon.

Upon making a microscopical study of the various organs, the most remarkable changes were seen in the lymphatic glands from the thorax and abdomen; almost without exception they showed œdematous swelling and focal changes in and about the germinal centres.

But little attention has hitherto been paid to the pathology of the conditions produced in the lymphatic glands in the body by superficial burns. Bardeen found that wherever lymphocytes were found, from the small nodules in Glisson's capsule of the liver to the largest lymphatic glands, these alterations appeared; apparently the first stage was an œdema, followed by a swelling of the lymphocytes in the germinal nests with vacuolation and nuclear changes. The germinal centre by this means expands until it reaches a size large enough to be visible to the naked eye. The protoplasm of the cells breaks up, certain endothelial cells in its neighbourhood act as phagocytes taking up the fragments of protoplasm and nuclei. In the Malpighian corpuscles of the spleen, the same changes are to be recognized.

How are these changes to be explained? Bardeen would assume that in these cases of skin burning, toxins or poisonous substances elaborated by the destruction of the superficial layers of the skin, pass into the circulation, and being carried by the blood into the lymphatics escape into the plasma towards the centre of the follicle where the arteries of the lymph glands break up into capillaries; this rapid flow of plasma gives rise to the œdematous swelling and tends to sweep the lymphocytes into the perifollicular lymph sinuses. It is interesting to note that nearly identical changes have been found in the lymphatic glands of children who have died from various infective diseases in which toxins circulate in the blood, while similar lesions can be produced experimentally in animals by the injection of ricin, abrin and similar complex organic poisons. Thus Bardeen is inclined to attribute certain very important pathological changes which follow severe burns to alterations in the blood. The destroyed red corpuscles found in the blood would not in themselves seem sufficient to explain either the clinical symptoms or the pathological lesions; nor again does thrombosis seem in these cases to have been important, but probably the alterations in the blood, as again the lesions here more especially referred to are due to the presence in the blood protoplasm of poisonous substances. Thus death in such cases would seem evidently to be the result of an acute toxæmia.

We have here gone very rapidly over the subject, and have of neces-

sity passed over many important observations. We trust, however, that we have said enough to show that this is a remarkable and important contribution to our knowledge of the nature of the lesions produced by burns and the rational explanation of the same.

J. G. Adami.

### Smegma Bacillus in Sputum.

A. PAPPENHEIM. "Befund von Smegmabacillen im menschlichen Lungenauswurf."—*Berl. Mediz. Woch.*, September 12, 1898.

As time goes on more and more evidence is being adduced to show that the routine examination of sputum by the Ziehl-Neelsen-Gabbett method is fallacious as a test for the presence of the germ of tuberculosis. For several years it has been known that the smegma bacillus is stained by this procedure, and that the acid of Gabbett's blue is not sufficient to decolourise it. Moreover, in morphology the two bacilli are so much alike that experts have been deceived. In the few observations which I have made on the subject the only difference that I could see between them is that the smegma bacillus is perhaps more slender and shows a greater tendency to possess abrupt curves.

In the beginning of 1897 Grünbaum (*Lancet*, Jan. 9, 1897,) pointed out the great frequency with which the smegma bacillus was found in normal urine, a fact which is of the utmost importance in the diagnosis of tubercular conditions of the urinary passages. According to his investigations the smegma bacillus is but rarely found in the urine of males, but is present in 59 per cent. of cases in that of females. As a rule, careful catheterisation eliminated all sources of error.

He also drew attention to the well-known fact that absolute alcohol will decolourise the smegma bacillus, while it has no effect on the tubercle.

Pappenheim seems to have been the first to record the observation that the smegma bacillus can be found in sputum. His case was a woman of 35, who presented marked emaciation, but without clear evidence of any lesion of the thoracic or other viscera. Cough set in and what were supposed to be tubercle bacilli were found in the sputum. Death occurred from œdema of the lungs. At the autopsy absolutely no tuberculosis was found, but a condition of bronchiectasis, broncho-pneumonia, and gangrene of the lung. Bacilli were found in large numbers on staining by the ordinary methods. No cultures could be obtained, and in sections stained by the method for detecting tubercle bacilli, no bacilli were seen. As the bacilli discovered were rapidly decolourised in absolute alcohol, it was decided that they were smegma.

Fraenkel (*Berl. Klin. Woch.*, Oct. 3rd, 1898,) states that he has met

with several cases of gangrene of the lungs in which the same mistake was made.

Curiously enough we have just had a case in the Royal Victoria Hospital which recalls those cited. A man was admitted on Sept. 22nd and died on Oct. 7th. He was very weak and extremely emaciated. The history was imperfect, but there had been progressive loss of weight, hemoptysis, cough and some difficulty in swallowing.

The sputum was thick, tenacious and contained streaks of blood. Examination by the Ziehl-Neelsen method showed bacilli which, while not quite typical in appearance, were so like tubercle that the case was considered as possibly being of that nature.

The physical examination showed a condition of great dyspnoea. Over the right chest posteriorly was an area of dulness extending from the spine of the scapula to the angle. Over this area the breath sounds were loud and blowing. All over the right lung, and at the base of the left, were fine moist râles. Vascular system was normal, except for accentuation of the pulmonary second sound. As the case progressed the sputum became greenish, with white caseous-looking masses here and there. At the autopsy (performed by Dr. Adami and the writer) the lungs were bulky and did not retract. At the great fissure of the right lung there extended a wall of adhesion which shut off a large cavity in the lower part of the thorax, which contained 800 cc. of extremely foul greenish-brown pus. The right lowest lobe was compressed. On section, near the apex was a gangrenous cavity with rugged walls. There was a large cavity, 11 cm. across, in the lowest lobe which communicated with the empyema cavity. The left lung was large and emphysematous, and in the lower lobe were a few gangrenous cavities, the largest the size of a hazel-nut, communicating with a bronchus. No evidence of tuberculosis was found anywhere.

The upper portion of the œsophagus was dilated; about half an inch below the bifurcation of the trachea was an ulcerated epithelioma of the œsophagus which extended to a point one inch above the cardia of the stomach. A few glands in the immediate neighbourhood were enlarged, but there were no metastases. The stomach and intestines were normal. In this case the gangrene was most probably the result of aspiration of food particles during vomiting.

Here the diagnosis was influenced by the presence in the sputum of bacilli resembling the tubercle bacillus. While it is not clear that these were smegma baccilli, the case illustrates the point that Gabbett's blue is not to be relied on as a decolouriser.

In looking over numbers of preparations of sputum, stained by carbol-fuchsin and decolourised by Gabbet's blue, I have been struck with the frequency with which micro-organisms, particularly cocci and diplococci, still retain a vivid red colour and certainly think that it would be safer to give up Gabbet's blue in favour of some other method. It would seem that in ordinary muco-purulent expectoration, bacilli are decolourised, but when there is a gangrenous process, where the sputum is rich in fatty acids and myelin, they seem to resist the action of Gabbet's blue.

Perhaps the simplest method is to stain with carbol-fuchsin, and then counter stain and decolourise with a saturated solution of methylene blue in absolute alcohol for five minutes.

This is Weichselbaum's method, and in my hands has proved satisfactory.

Honsell (*Arch. aus d. path. Inst. zu Tübingen*, Bd. II., s. 317,) recommends decolourisation with a 3 per cent. solution of hydrochloric acid in absolute alcohol, for not less than ten minutes, counter staining with a solution of methylene blue in 50 per cent. alcohol.

Pappenheim, after numerous trials, recommends staining, first with carbol-fuchsin, then counter staining and decolourisation in the following:

Absolute alcohol, 100 parts.  
Corallin (Rosolic acid) 1 part.  
Methylene blue to saturation.  
Glycerine, 20 parts.

Coverslips are subject to this stain for three minutes. The tubercle bacilli are always red, while the smegma and other germs are blue.

The only bacilli found in sputum which simulate the tubercle are the bacillus of leprosy and the smegma. The former, of course, differs morphologically, and is often found within cells, while the history and the course of the disease would differentiate. It stains much more readily than the tubercle. Bacteriologically, the smegma bacillus differs in addition to the points above mentioned, in that it usually grows readily on the ordinary culture media, though not invariably so, stains well by the common aniline colours, and is non-pathogenic. In urine it is usually more angular at the ends, occurs in masses, and is often attached to epithelial cells. No stress should be laid on the point that bacilli are found within cells, for the tubercle like the others can be found thus situated.

A. G. Nicholls.

## Reviews and Notices of Books.

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**A Manual of Modern Surgery, General and Operative.** By JOHN CHALMERS DA COSTA, M.D., Clinical Professor of Surgery, Jefferson Medical College, Philadelphia; Surgeon to the Philadelphia Hospital, etc. With 386 Illustrations. Philadelphia: W. B. Saunders. 1898.

This is a second edition. The first appeared in 1894. The second edition is larger than the first and contains over a hundred pages more matter. It has been largely rewritten and much new matter has been added. Sections have been added upon the surgery of the liver and gall-bladder, the spleen, the pancreas, the female breast, wounds inflicted by modern projectiles, electrical injuries, and the use of the Röntgen Rays. The following operations have been described: Resection of the Casserian Ganglion; Methods of Gastrostomy; Schedo's Operation of Thoracoplasty; Use of the Murphy Button; Various new methods of Enterorrhaphy; Bodine's method of Colostomy; Prevention of Hemorrhage in Hip-Joint Amputation by Macewen's method of Aortic Compression; Edmund Owen's Operation for Harelip; Senn's method of Resection of the Shoulder-joint, etc.

The book will be found useful to students and general practitioners. It is difficult if not impossible to deal satisfactorily with such a great subject as general surgery in so small a volume. All padding must be left out, and in some cases the details of complicated operative procedures are so much abbreviated that a degree of obscurity is unavoidable.

In some instances the subject matter is open to criticism. For instance, in dealing with the treatment of tetanus the author very correctly intimates that the best treatment is prevention, and with this end in view directs that "every punctured wound is to be incised to its depth and thoroughly cleaned and drained. No mention is made of the value of the tetanus anti-toxine as a preventive, and very little is said about its use during the course of the disease.

In the chapter on fractures, one is reminded of old days by some of the apparatus shown, for example, the leg fracture-box. The ambulatory method of treating fracture of the leg is mentioned, but not sufficient detail given, to enable one not familiar with the method to employ it.

Exception may well be taken to the dogmatic and unqualified directions for the treatment of compound fractures. If a student start out, determined to unite the fragments of bone by wire, cat-gut or kangaroo-tendon, and to pass a drainage tube through every leg in which there is

a compound fracture, his conduct will probably be severely criticised by those who know better.

The publisher's part of the work is excellent. The book is of convenient size, and the print is good.

G. E. A.

**Yellow Fever, Clinical Notes.** By JUST. TOUATRE, M.D., Former Physician-in-Chief of the French Society Hospital, New Orleans. Translated from the French by CHAS. CHASSAIGNAC, M.D., New Orleans. Small 8vo. pp. 206. New Orleans, 1898.

This work, written in a clear style with occasional indications of its French origin, deals more especially upon the importance of Faget's Law, as it may be termed. Chas. Faget, a New Orleans physician, after the epidemics of '53, '58, '67, '70 and '73 in New Orleans, called attention to the fall in the pulse rate during the first days of the disease as one of the indispensable diagnostic signs thereof. There is no other infectious disease in which there is this strongly marked divergence between the falling pulse rate and the rising temperature, and Touatre gives very numerous charts bearing out the law and showing that in the first stage of the disease the divergence is just as characteristic as are icterus and black vomit in the somewhat later stages. Apparently Dr. Touatre worked with Faget, and materially aided in establishing the value of this law.

The work is of interest now that increased attention has been called to the disease by the late war and the observations of Sanarelli.

**A Treatise on the Science and Practice of Midwifery.** By W. S. PLAYFAIR, M.D., LL.D., F.R.C.P., Physician-Accoucheur to H. I. and R. H. The Duchess of Saxe-Coburg and Gotha (Duchess of Edinburgh); Emeritus Professor of Obstetric Medicine in King's College; Consulting Physician for the Diseases of Women and Children to King's College Hospital, The General Lying-In Hospital, The Evelina Hospital for Children, etc.; Late President of the Obstetrical Society of London; Examiner in Midwifery to the Universities of Cambridge and London, and to the Royal College of Physicians. Seventh American from the Ninth English Edition. With 7 plates and 207 illustrations. Lea Brothers & Co., Philadelphia and New York. 1898.

Little need be said in praise of a work which has run through eight editions since its first appearance in 1876. It would, however, be of interest to compare the present edition, published in 1898, with the one of twenty-two years ago, and note the changes which have taken place. The introduction of antiseptics in midwifery practice is perhaps the most important and far reaching in its effects, and next to this the more general use of forceps in prolonged labour. On this latter subject, the author, while not altering his opinion as set forth in the last (eighth)

edition, has inserted a foot-note criticising Professor W. Japp Sinclair's contention in his address delivered at the Montreal Meeting of the British Medical Association last summer. Sinclair claimed that the vast increase in surgical gynecology of late years was due to surgical interference in midwifery practice, and blamed the text-books for advocating the too frequent use of forceps. That such is not the case, Playfair endeavours to show, drawing on his own large experience to prove that while there may be some abuse, this is offset by a far greater gain in various ways, among others, by the almost entire disappearance of recto-vaginal fistula, an accident relatively common when the head was allowed to lie in the same position in the pelvis for hours at a time.

In the present edition there has been a thorough revision of the text, many parts being entirely re-written. It contains two new plates and seventeen new wood-cuts, while several illustrations which had become obsolete have been omitted.

**Atlas of Syphilis and the Venereal Diseases, including a Brief Treatise on the Pathology and Treatment.** By Professor Dr. FRANZ MRACEK of Vienna. Authorized Translation from the German, Edited by L. BOLTON BANGS, M.D., Consulting Surgeon to St. Luke's Hospital and the City Hospital, New York; late Professor of Genito-Urinary Surgery and Venereal Diseases, New York Post-Graduate Medical School and Hospital. With 71 coloured plates. Philadelphia: W. B. Saunders. 1898. Canadian Agents, J. A. Carveth & Co., Toronto. Price \$3.50.

This book is intended to supply the general practitioner with an atlas of syphilis and venereal diseases, which will be useful in his daily practice. With this object in view, the author has selected for his illustrations the more common forms of the syphilitic eruptions although, as can readily be understood, all but the extremely rare are included in the series of sixty plates of this disease.

The plates are reproductions of water colour drawings made in the author's clinic at Vienna, and are identical with those supplied for the German Edition. They are remarkably well executed and true to life, both in colouring and appearance, and lose nothing by being of much smaller size (crown 8vo) than in the majority of atlases of syphilology. In several instances, where the characteristic features of the eruption are better brought out by a closer view, a portion only of the body has been selected and represented in life size, while the general distribution of the lesion has been shown by a supplementary wood-cut. The first twelve plates give representations of the various forms and sites of the initial lesion. Then follow thirty plates of the secondaries and fifteen of the tertiaries. Among the latter one misses the tubercular ulcerating form which is so commonly met with in this country. There are also three plates of hereditary syphilis. Chancreoids, buboes and venereal warts,



with one plate of molluscum contagiosum surrounding the vulva make up the remaining ten plates.

On the opposite page to each of the plates is given a brief summary of the history of the case, together with a description of the skin lesion and the treatment used with the result. The volume also contains a short account of syphilis, venereal ulcers and gonorrhœa, more especially with regard to treatment. The prescriptions are written out in full, the English equivalents to the metric weights and measures being given in brackets.

The book is a remarkable one, when one considers its small cost as compared with most works of this class, and deserves a wide circulation.

G. G. C.

**A Pocket Medical Dictionary.**—Giving the Pronunciation and Definition of the principal words used in Medicine and the Collateral Sciences, including very complete tables of the Arteries, Muscles, Nerves, Bacteria, Bacilli, Micrococci, Spirilli and Thermometric Scales, and a Dose-List of Drugs and their Preparations, in both the English and Metric Systems of weights and measures. By GEORGE M. GOULD, A.M., M.D., Author of "The Illustrated Medical Dictionary," "The Student's Medical Dictionary," Editor of "The Philadelphia Medical Journal," President, 1893-94, American Academy of Medicine. A new Edition, entirely re-written and enlarged, including over 21,000 words. Philadelphia: P. Blakiston's Son & Co. 1898. Price \$1.00.

This is a remarkably complete little pocket dictionary, printed on good paper with gilt edging, and bound in leather with rounded corners, so as to stand a large amount of wear. The tables are very full and will be found of great service to the student in memorizing. The number of words is nearly double that of the first edition.

**American Pocket Medical Dictionary.** Edited by W. A. NEWMAN DORLAND, A.M., M.D., Assistant Obstetrician to the Hospital of the University of Pennsylvania; Fellow of the American Academy of Medicine, etc. Containing the pronunciation and definition of over 26,000 of the terms used in Medicine and the kindred sciences, along with over 60 extensive tables. Philadelphia: W. B. Saunders. 1898. Price \$1.25.

In this little book the author has supplied us with a small dictionary, which though handy in size, is yet complete enough to meet the requirements of both the practising physician and the student of medicine. It contains, moreover, a large number of most valuable tables, including a table of doses in both the English and metric systems, which will be found most useful. The book is bound in leather, with gilt edging to the pages, and is neat, strong, and durable.

**Introduction to Pathology and Morbid Anatomy.** By T. HENRY GREEN, M.D., F.R.C.P. Revised and enlarged by H. MONTAGUE MURRAY, M.D. 8th American Edition, thoroughly revised from the 8th English Edition by WALTON MARTIN, M.D. Svo. pp. 582, 216 illustrations and a colored plate. Philadelphia and New York: Lea Bros. & Co. 1898.

It is interesting to compare this eighth edition with the first and second editions of Green's little work, which from its price and clearness, has always been popular with the students wishing to "grind up" the elements of general pathology and morbid anatomy. But even now when it has risen to its present size, we cannot feel that it is wholly adequate. The general pathology it is true, has much improved; we doubt, however, whether it is wise to introduce 100 or more pages of bacteriology, or whether any one can properly deal with the elements of special pathology in 170 pages. It would be well in a future edition we should think, to delegate bacteriological subjects entirely to text-books on that subject, and to expand the section upon special pathology.

The illustrations are very clear and the text is clear and good.

**The Medical News Visiting List for 1899.** Weekly (dated, for 30 patients); Monthly (undated, for 120 patients per month); Perpetual (undated, for 30 patients weekly per year); and Perpetual (undated, for 60 patients weekly per year). The first three styles contain 32 pages of data and 160 pages of blanks. The 60-patient Perpetual consists of 256 pages of blanks. Each style in one wallet-shaped book, with pocket, pencil and rubber. Seal Grain Leather, \$1.25. Thumb-letter Index, 25 cents extra. Philadelphia and New York: Lea Brothers & Co.

A Visiting List is an indispensable convenience for the active practitioner. Its carefully adapted blanks enable him at once to note clinical details of every day work, as well as charges and receipts, and to unburden his memory from what can better be carried on paper. It also furnishes him with a legal record necessary for the collection of delinquent bills. Prominent among the many books of this nature stands the *Medical News Visiting List*. Its blank pages are arranged to classify and record memoranda and engagements of every description occurring in the practice of the physician, surgeon or obstetrician. The work opens with 32 pages of printed data of the most useful sort, including an alphabetical Table of Diseases with Approved Remedies, a Table of Doses, sections on Examination of Urine, Artificial Respiration, Incompatibles, Poisons and Antidotes, a Diagnostic Table of Eruptive Fevers, and a full-page plate showing at a glance the incisions for ligation of the various arteries, an invaluable guide in such emergencies.

## **Society Proceedings.**

### **MONTREAL MEDICO-CHIRURGICAL SOCIETY.**

*Stated Meeting, October 24th, 1898.*

**J. G. ADAMI, M.D., PRESIDENT, IN THE CHAIR.**

Drs. W. G. M. Byers, C. H. Church, H. M. Church, W. M. Fisk and C. J. Edgar were elected ordinary members.

#### **Pathological Specimens.**

Dr. A. G. NICHOLLS showed the pathological specimens, and gave the history of a case of appendicitis, with unusual changes in the liver, a case of gastro-cholecystic fistula with diverticula in the duodenum, and a case of cancer of the œsophagus. (See page 826.)

#### **Cancer of the Tongue.**

Dr. G. E. ARMSTRONG showed a man from whom he had removed one-half of the tongue by a modification of Buntin's method. (To be published in the December number.)

#### **Charcot's Joints.**

Dr. G. E. ARMSTRONG showed a tabetic patient with marked disorganization of the right knee and left hip joints. (To be published in the December number.)

#### **The Crescent form of Malaria Plasmodium.**

Dr. H. A. LAFLEUR exhibited specimens of blood from a case of æstivo-autumnal malaria which had been under his care in the Montreal General Hospital showing the crescent form of plasmodium.

The patient, a French-Canadian, had served in the United States Army and contracted the malaria at Santiago. At the close of the war he had come to Canada and so drifted into the hospital. One feature of interest in the case was the resistance shown by the organism to quinine. After three days of observation, quinine was commenced on the fourth day, and although under its influence the paroxysms of fever were controlled, the plasmodium was still present in the blood, though not in such numbers, when he left the hospital on the tenth day. In the quotidian or tertian fevers usually met with in Canada, from ten to fifteen grains of quinine given in divided doses was sufficient to entirely remove the plasmodium from the blood. This was the first time that the crescents had been shown before the

Society, but the speaker had seen them in one case in hospital the preceding summer.

### Hospital Abuse.

The discussion on this subject which was to have followed the reading of Dr. Arnstrong's paper at the meeting of June was continued.

Dr. H. L. REDDY said that there was very little room for hospital abuse in the Women's Hospital with which he was connected, as the conditions were such that it was to the interest of the patients themselves to obey rules. Thus the patients were all required to pay a small amount towards their board weekly if they desire to send their children to the Foundling Institutions. If they do not pay their board they are required to nurse their children. They are warned of the danger of mammary abscess if they wean the children on leaving the hospital without having the treatment which is required on such occasions. For those who are really unable to pay the small sum demanded, it was often possible to find some one responsible on whom the charge could be laid.

The matron who admits the patients under his directions generally found out the truth, and naturally a great deal depends on her to prevent abuse of the charity of the hospital. If there was no one whose duty it was to provide, and in all cases of the deserving poor married women, they are admitted to the hospital free of charge.

Dr. T. G. RODDICK thought that Dr. Arnstrong referred more especially to abuse in the out-patient departments of the general hospitals and agreed that there was great abuse made of these charities. He felt, however, that the profession were more to blame than the public. The Montreal General Hospital had gone into this subject years ago and found that many, then, were in the habit of driving to and from the hospital in cabs. He advocated more rigid attention to receiving patients only on properly made out certificates given by responsible persons. He objected to the small charge made at most hospitals to poor patients, as these on receiving treatment were under the impression, in many instances, that they were paying for what they obtained.

Dr. H. A. LAFLEUR was of the opinion that the much vaunted certificates were worse than useless. Any clergyman or priest would give a certificate for the asking, and the only class that the certificates kept from coming to the hospital were those who would not take the trouble of procuring them.

Dr. ROBERT CRAIK thought that the system in vogue at the Roosevelt Hospital in New York was about the best remedy. This was that every applicant for treatment was obliged to go before an officer and register the name and other particulars, and if obviously a suit-

able case, he or she was passed on to the doctor ; if not, the case was investigated before it was accepted for treatment.

Dr. A. J. RICHER was afraid that the method of dealing with applicants referred to by Dr. Craik might put such difficulties in the way of admitting patients, that it would make the system worse than the present one. In his experience in the hospitals of Paris, where a somewhat similar system was carried out, cases were not rare where patients had applied to the bureau and been refused, and had been picked up later on the streets dead. It might also cause abuse in the opposite direction. The officers whose duty it was to attend to the admission of patients were apt to take advantage of their position and become abusive to the poorer classes. At the same time he thought that it might be possible, through a central board as suggested by Dr. Armstrong, to obviate this difficulty and thus try to relieve the hospitals of much of the present abuse.

Dr. J. M. ELDER held that certificates were absolutely worthless, and that the present means of preventing abuse were quite inadequate.

There was a certain definite floating population of hospital abusers, who present themselves for treatment with more or less regularity at the various hospitals. This class was able to pay for medical services and should be made to do so ; but the real difficulty in dealing properly with them lay in the rivalry between the hospitals themselves for patients. The remedy was concerted action on the part of the different hospital authorities, so that each hospital should furnish to the others a sort of "black list" of these professional "hospital abusers," and thus render it impossible for them to get *gratis*, medicine and advice they were well able to pay for.

Some such plan as Dr. Armstrong suggests must soon be adopted in justice to the hospitals, as well as to the outside practitioners.

Dr. A. E. GARROW agreed with Dr. Roddick that the physicians themselves were the worst offenders, as patients sent to any hospital with a doctor's certificate stating that they were suitable cases were admitted without question. The method in vogue for the past year at the Royal Victoria Hospital was somewhat like that advocated by Dr. Craik and it had been found to work very well.

The PRESIDENT pointed out that clearly the main cause of the abuse of hospitals by the public, the hospital management and the profession, lay in the fact that no clear distinction was made between the hospital as a pure charity and the hospital as what is truly, a benefit society—and that it was the attempt with true British illogicality and desire to compromise, to run our hospitals as both at the same time.

which was at the basis of the main abuses of which complaint is now being made.

If the hospital has been founded originally for the benefit of the poor, and if that hospital calls itself a charitable institution, it is, if not absolutely wrong, certainly most impolitic for such hospital to accept into its wards pay patients. Only those who are incapable of paying the usual fees of the practitioner should be admitted. There may be certain minor exceptions to this broad principle, but the principle exists, for what happens if this rule be neglected? Y. sees that X. who can perfectly well afford medical treatment, is admitted to the hospital, and not knowing the exact conditions of X.'s admission, is unable to see why he also should not use the hospital; what is more, as Dr. Armstrong has pointed out, when the subscribing public recognise this fact and recognise also that the attention which they receive at the hospital is better than they can possibly receive at home, then these subscribers begin to be anxious themselves to use the hospital and once private wards are introduced, steadily, both the outside public and the staff of the hospital are led to urge that there be an increased number of such private wards, and so gradually and surely once the principle is admitted that those who can afford to pay the ordinary fee demanded by the ordinary practitioner, can get treatment at the public hospital, the attempt of the paying public to utilise the hospital becomes evident and becomes successful. It was a mistake for charitable institutions, such as our larger hospitals in Montreal, to allow any corporations or combination of individuals to subscribe to the hospital funds conditionally.

The working classes now-a-days have become so accustomed to the system of medical relief afforded by the benefit societies to which they belong, that almost naturally they appear to be incapable of seeing that their subscriptions to the hospital are not of the same class as their subscriptions to their benefit society. Thus it is that foremen and others receiving high wages, consider themselves absolutely entitled to treatment at the hospital to which they have subscribed.

It is for our hospitals to make it clearly understood that they only exist for those who cannot pay the ordinary fee of the ordinary practitioner. The more the President considered this subject the more he was convinced that it was a mistaken policy to have private and public wards in the same building. Undoubtedly, the better class public has of late grown to realise the admirable service afforded in our hospitals and is beginning to demand that it should be entitled to the same advantages as the poor can now obtain. But the well-to-do

have no right to ask the charities to give them these advantages. The way to satisfy this demand is for the public or sections of the public, acting more or less in concert with the medical profession, to combine and establish pay hospitals. It would even be legitimate for the existing hospitals to establish separate buildings in which they receive well-to-do patients and to employ the profits obtained from such patients for the purposes of the charity pure and simple, but so long as pay patients and charity patients are received into the same building, and given what is practically the same treatment, for so long is it certain that those who can perfectly well afford to pay the hospital charges and the physicians fees' will attempt to benefit from the charity.

In the meantime, he was of the opinion that to lessen the evil, no better scheme could be brought forward than that suggested by Dr. Armstrong, and he hoped that this Society would use its influence to bring about the development of such a system of charity organization and enquiry into the good faith of those presenting themselves for gratuitous treatment in our public hospitals.

## EIGHTH ANNUAL MEETING OF THE AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION, BUFFALO, N.Y.

The eighth annual meeting of The American Electro-Therapeutic Association was held in Buffalo, N.Y., on September, 13th, 14th and 15th, 1898, under the presidency of Dr. Charles Rea Dickson, of Toronto, Ont.

### *First Day.*

Dr. Conrad Diehl, Mayor of Buffalo, welcomed the Association to the city, and Dr. Francis B. Bishop, of Washington, D.C., responded to the address of welcome. The president announced the delegates appointed from medical societies.

Reports of the standing Committees on Scientific Questions were received; Meters, by Dr. Margaret A. Cleaves, of New York; Constant Current Generators and Controllers, by Dr. Robert Newman, of New York; Electric Light Apparatus for Diagnosis and Therapy, and the Roentgen X-Ray, by Mr. J. J. Carty, E.E., of New York. The following were read: Phlebitis, a Clinical Study, by Dr. Margaret A. Cleaves, New York; The Diagnostic and Therapeutic Relations of Electricity, to Diseases of the Central Nervous System, by Dr. A. D. Rockwell, New York.

At the afternoon session the first paper by an honorary fellow of the Association, Dr. Georges Apostoli, of Paris, France, New Uses of the Undulatory Current in Gynæcology, was read by Dr. G. Betton Massey, of Philadelphia.

Electricity in the Treatment of Uterine Fibromata, by Dr. Felice La Torre, of Rome, Italy, honorary fellow, was read by Dr. John Gerin, of Auburn, Secretary of the Association. Electro-Therapeutics in Gynæcology, by Drs. Georges Gautier and J. Larat, honorary fellows, of Paris, France, read by Dr. Dickson, President of the Association.

A paper by Dr. William J. Herdman, of Ann Arbor, Mich., on The Use of Electricity in Gynæcology, read by title, was followed by a paper on The Treatment of Uterine Fibroids by Small Currents, Administered Percutaneously, by Dr. Richard J. Nunn, of Savannah, Ga.

Dr. W. H. White, of Boston, read a paper by Dr. Adelstan de Martigny, of Montreal, on Treatment of Menorrhagia by Weak Current and Silver Internal Electrode.



*Second Day.*

The first paper was presented by Dr. Lucien Howe, of Buffalo. Dr. Howe's subject was The Method for Using Cataphoresis in Certain Forms of Conjunctival Inflammation.

He illustrated his remarks by means of a number of his patients. The paper was received with great interest, and a lengthy discussion followed.

Dr. Robert Newman, of New York, presented an able paper on Electricity in Deafness and Stricture of the Eustachian Tube. In his address, Dr. Newman rehearsed the history of a peculiar case which came under his professional care. He also cited a number of other cases, which had been reported by other physicians.

The following papers were read : Dr. Grover W. Wende, of Buffalo, Electricity in Acne Vulgaris and Acne Rosacea ; Dr. William C. Krauss, of Buffalo, A Case of Lightning Stroke Without Serious Consequences, read by title.

Dr. G. Sterling Ryerson, of Toronto, Cases of Lightning Stroke Causing Diseases of the Eye ; Dr. Francis B. Bishop, of Washington, High Tension Current in Neuritis ; Dr. Charles Rea Dickson, Electricity in the Treatment of Goitre.

In the afternoon upon re-assembling President Dickson delivered his annual address.

Then followed a series of Ten-minute Talks on Electro-Therapy, which had been prepared for the special benefit of the busy practitioner, technicalities and details being avoided as far as possible. It was intended that the Talks should be suggestive rather than exhaustive.

The Effect of Electricity Upon Tissue Metabolism, by Dr. William J. Herdman, of Ann Arbor, Mich., was read by title. Dr. G. Betton Massey, of Philadelphia, presented The Galvanic Current in Gynæcology. Dr. C. R. Dickson, Surgical Uses of Electricity. G. Herbert Burnham, of Toronto, Combined Use of Medicinal and Electrical Treatment in Some Affections of the Eye, read by title. Dr. Robert Newman, of New York, Electricity in Genito-Urinary Diseases. Dr. G. Betton Massey, Treatment of Malignant Growths by Means of Electricity. Dr. Louis A. Weigel, of Rochester, Orthopædic Uses of Electricity. The Functional Neuroses with Special Reference to Neurasthenia, Their Pathology and Treatment, by Dr. Rockwell. Electricity in Diseases of the Nervous System, Dr. Herdman, was read by title.

A short business session was held from 8 to 9 p.m., at which the following officers were elected :

President.—Dr. Francis B. Bishop, of Washington.

First Vice-President.—Dr. Ernest Wende, of Buffalo.

Second Vice-President.—Dr. W. H. White, of Boston.

Secretary.—Dr. John Gerin, of Auburn.

Treasurer.—Dr. Richard J. Nunn, of Savannah, Ga.

Executive Council.—Dr. Robert Newman, of New York, and Dr. G. Betton Massey, of Philadelphia, three years ; Dr. A. D. Rockwell and Dr. William J. Morton, of New York, two years ; Dr. Charles R. Dickson, of Toronto, and Dr. Frederick Schavoir, of Stamford, Conn., one year. Washington was selected for the convention next year, to be held September 19-21, 1899.

### *Third Day.*

A resolution was passed urging upon colleges and medical schools the necessity of establishing chairs for the teaching of electro-therapeutics : or if that is not at once practicable, that more time be devoted to the teaching of this very important branch ; and that the matter be more fully urged upon the attention of The Association of Medical Colleges. Many new members were elected, and the customary votes of thanks passed.

The congratulations of the American Electro-Therapeutic Association were extended to the University of Buffalo for its progression in establishing a chair of electro-therapeutics in the medical college.

A general vote of thanks was also adopted, expressing the association's deep appreciation of the courtesy and hospitality extended to the members during the convention in Buffalo.

The following papers were presented : Drs. Georges Gautier and J. Larat, of Paris, France, The Hydro-Electric Bath with Sinusoidal Current in Disease ; and The Use of the Hot Air and Light Bath in Disease. Dr. Francis B. Bishop, of Washington, Alternating Dynamo Currents. Dr. Margaret A. Cleaves, of New York, The Electric Arc Bath. Dr. J. H. Kellogg, of Battle Creek, Mich., The Electric Light Bath. John J. Carty, of New York, a well-known electrical engineer, on Some Suggestions on the Possibilities of Cataphoresis. Nikola Tesla, (read by Dr. White, of Boston) A High Frequency Oscillator for Electro-Therapeutic Purposes.

The effect of High Tension Discharges upon Micro-organisms, Drs. J. Inglis Parsons and C. Slater, London, England.

The Action of X-Rays upon Tuberculosis, Drs. J. Bergonie, of Bordeaux, France, and Teissier, of Paris.

Two Years of Practice in Radiotherapy, Drs. Georges Gautier and J. Larat, Paris, France.

The social side of the meeting was by no means neglected, Dr. Ernest Wende, Health Commissioner of Buffalo, had charge of the local arrangements for the comfort, convenience and entertainment of the visitors, and too much praise cannot be accorded for the manner in which his plans were carried out.

A most interesting exhibition of electrical apparatus for diagnostic, therapeutic and radiographic purposes was held in the room adjoining the meeting hall, and was a very popular feature of the meeting.

The eighth annual meeting was universally conceded the most successful and enjoyable that has been held, and the prospects for the association were never brighter or more encouraging. Arrangements are already in progress for the Washington meeting.

## Correspondence.

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### THE COLD BATH TREATMENT OF TYPHOID FEVER CARRIED OUT UNDER DIFFICULTIES.

The following letter tells in a graphic way some of the difficulties and trials of the country practitioner in dealing with typhoid fever. It, however, shows that where there is a will there is a way to carry out the cold bath treatment. Dr. Gordon and the nurses who so ably and generously assisted him in his work, have the satisfaction of having performed a very difficult and trying task, which resulted in the undoubted saving of several lives. All honour to the doctor and nurses. (J.S.)

*To the Editors of THE MONTREAL MEDICAL JOURNAL.*

SIRS,—I enclose you a chart which may prove interesting. It illustrates Brand's system of bathing, and excellent nursing, modified by ignorant relations in smuggling food to the patients.

The scene of action was in the rebellious township of Lowe, on the Gatineau, County of Wright, 40 miles from Ottawa. There was a series of thirteen cases, beginning about the end of July and lasting into October, eleven residents, and two others who were building a barn and living there. Of these we had eight, the rest were sent to Ottawa to different hospitals, and of these five two died. We lost one out of our eight. They were using the water of a small puddle, called a spring, in heavy clay, milk cans in one corner, cows tramping through it, and the natural receptacle for surface washings from the barn and stable. The people were very ignorant and dirty; with three varieties of pediculi and other vermin quite plentiful. We had to make a bunk for each one in the cabin and furnish nearly everything to cover them, being greatly assisted by the Victorian Order. Nurses Jemmett and Hazen of the Victorian Order of Nurses, nursed them for eleven days, then Nurse Hazen left, and Nurse Jemmett stuck to them alone without any help worth mentioning for four days, till Nurse Hercomb, of Montreal, who was taking a holiday up here, volunteered to go to her assistance, then they finished it out together, staying about six weeks. Our bath was made out of rough boards, like the outside shell of a coffin, but it served.

The funny part of the business is that we had relapses which we

could not understand till one of the nurses discovered a convalescent carrying a quarter of a sodden pie upstairs under her apron and giving it to the case whose chart I send you. Then the whole thing came out, there was a family compact to prevent us from starving the "poor things," though we had spent hours trying to impress the danger of such a course on them, we did not have the sole monopoly of the feeding of the case. The nurses slept in the barn and the neighbors, with two exceptions, avoided the district most carefully. I "loaned" my socks to the corpse and borrowed a pair of stockings from one of the nurses to come home with. Our fatal case, in the 4th week, suddenly collapsed, temperature went down to  $96^{\circ}$ , respiration 6, pulse imperceptible at wrist, very unsatisfactory with stethoscope, eyes half shut, flies resting on them did not disturb him, glazed; lived a week after this and reacted under hypodermics of strychnine, brandy, &c., and hypodermoclysis of normal salines, nutrient and saline enemata, and a circle of heated stones placed around him; catheter regularly, became conscious, temperature rose up to  $100\frac{3}{5}$ , pulse weak but perceptible at wrist, could take nourishment, thought we were going to get him through but he went off suddenly on the 8th day; no symptoms of perforation, no hæmorrhage.

I took the post-graduate course in McGill last May, two or three more such courses would do me no harm.

Very sincerely yours,

CHAS. M. GORDON.

Aylwin, P.Q., November 2nd, 1898.

T H E

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

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## HOSPITAL ABUSE.

It would appear that action, looking to a lessening of hospital abuse in Montreal, is likely to follow as a result of the discussion of Dr. Armstrong's paper by the members of the Montreal Medico-Chirurgical Society. This Society has adopted the principle of action, outlined by Sir William Broadbent, as that of the London Charity Organization Society.

In response to a letter sent to the presidents of the different Montreal hospitals, replies have already been received from Mr. H. Wolferstan Thomas, President of the Montreal General Hospital, and from Mr. R. B. Angus, President of the Royal Victoria Hospital, signifying their willingness to assist in lessening the growing evil, and we learn that the Western Hospital is also willing and anxious to join in the movement. We hope that the other hospitals will also take a part.

The idea is to form a Central Board with each of the hospitals represented on the Board by one or two members of this Committee of Management. It is probably desirable also to have on the Board a few hospital physicians as well as one or two physicians not connected with any hospital. A Board so formed would be thoroughly representative, and their action would be uniform and comprehensive. Such a Board would tend to check the present practice occasionally adopted by very well-to-do people of going from one hospital to another until one was found that did not put inconvenient questions, and did not take too much trouble to verify the answers given.

It will be the aim of the Board to facilitate the entrance and immediate care of all needy applicants, to give without question suitable relief to all emergency cases, and to prevent so far as possible the gratuitous treatment, both in the out-door departments and in the

public wards, of people who are perfectly well able to pay for the same.

We hear this complaint of hospital abuse from all parts of our Dominion where public hospitals obtain, and it may not be out of place to suggest that this Central Board place themselves in communication with other hospitals throughout the country. In this way, it could be made possible for hospitals to provide better accommodation for a larger number of needy while preventing the abuse of the funds provided by a generous and charitable public for the care of the sick poor.

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### THE PLAGUE IN VIENNA.

It is but a few months ago since we saw a letter from a leading sanitarian in India who had himself worked for months attempting to stem the plague in Bombay, in which he expressed himself, to say the least, as doubtful concerning the future of the plague, and more especially the future of Europe. In India, he and those with him, had powers so great that they could remove whole villages and towns into temporary isolation, and could burn down the cheaply constructed wooden houses, and despite all this, yet were unable to overcome the epidemic. What it would be if the disease reached the solidly built houses of Europe, he scarce dare mention. At the time, we thought that these forebodings were excessive, but, slowly the disease is creeping northward along the old cholera route through Russia, and even though now we are not prepared to believe that Europe is in danger, we can readily understand that the recent episode in Vienna has caused great excitement.

In the *Vienna Clin. Woch* of Oct. 27, there is what seems to be a final account of the occurrence, and it disposes of the rather sensational statement copied into some of the leading journals here, to the effect that the now notorious Barisch, contracted the disease by being bitten on the hand by an inoculated rat, and subsequently suffered from symptoms of pneumonia, which eventually showed itself to be that form of plague pneumonia which had been one of the features of the Bombay epidemic. Such pneumonia, in the absence of axillary buboes, is not easily explicable on the theory of a bitten hand. The man had evidently been over-drinking and was in a susceptible condition in consequence.

Despite all care, Dr. Müller, who assisted in the disinfection of the death chamber, fell ill two days after the death of Barisch and died within 24 hours, while the nurse Pacha was taken ill about the same time as Dr. Müller, and died after 10 days illness. No wonder that

this mortality alarmed the Viennese, and that the strictest precautions have been taken.

It is difficult to say how these cases of infection occur in bacteriological laboratories. Perhaps this is a wrong way of putting it, for to the outsider, when it is taken into consideration that each culture made may contain millions of bacteria, it is difficult to understand how it is that any medical bacteriologist remains alive and well, yet as a matter of fact, under the ordinary regulations of the bacteriological laboratory, there is certainly a minimum of danger; bacteria are sedulously kept corked up, and it becomes second nature to destroy or disinfect everything which might hold or convey living pathogenic germs. All over the world the plague bacillus has been and is being studied, not only in the well established laboratories of the big cities, but in temporary laboratory buildings put together anyhow in Hong Kong, Bombay and elsewhere, and this is the first occasion in which any of the workers has succumbed. Possibly the low state of health of the man Barisch may explain the origin of the trouble, but even granting that, there must have been some carelessness in the laboratory, and if the disease was as stated the respiratory form, then some of the bacilli must have been allowed to get free around the laboratory and so into the dust.

Looking backwards, one recalls other cases in which bacteriological investigations have been fraught with danger, but in nearly every case, the victim has been to blame himself for carelessness. The writer of this, has known those who have suffered from Glanders, Anthrax, Tuberculosis, Typhoid, and of cases of Cholera and Diphtheria occurring in laboratory workers directly as the result of their work. Happily such cases are relatively rare, and indeed the dangers of a bacteriological laboratory are less than those of the post mortem room.

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### THE GARBAGE PROBLRM.

The Municipal Government of Montreal, appears to be perennially passing through a series of crises. Each department seems lacking chiefly in ability to do the one object for which it is presumed to exist. The Health Committee never has money to spend on ordinary sanitary objects, as three-fourths of its revenue is absorbed by the cleaning out of back lanes and destroying garbage which accumulates there. The other sanitary needs of the city appear to be left pretty much to take care of themselves. It may be recalled that some years ago a certain individual who was a city contractor, had the duty of disposing of the garbage. He fulfilled that part of his contract called



for in the removal of the garbage, but the other part of the contract, calling for the destruction of the garbage and preventing it from becoming a public nuisance and a menace to health, he did not fulfil. On this account or possibly from other reasons, the contract was not renewed by the council and the Health Committee assumed the responsibility of disposing of the garbage themselves. This work was placed under the immediate supervision of the Sanitary Engineer, whose work in the department as far as we can learn has been thorough and satisfactory and with whom we have no fault to find.

The work necessitated the purchase of a number of horses and carts by the city, the building of an incinerator and the employment of a large staff of men. The incinerator was somewhat of an experiment in the way of construction, and allowing for this has been fairly successful. The garbage has been under this new regime, fully as much of a problem as under the old. There have been constant complaints, that the appliances, staff and funds were insufficient to cope with the task. One trouble was that the garbage was mixed with large quantities of ashes. Hence the officials wished to insist that the ashes should be collected separately; this proposition it was said, would save annually to the Health Committee, the sum of \$25,000, but that is not necessarily a reason why the Health Committee refused to have anything to do with it. Diluting garbage with ashes would not be an evil during the summer, as it would tend to mitigate the effluvia of decomposition, but unfortunately in the summer season when garbage is plentiful, ashes are scanty, and in the winter when there is no tendency to decomposition, the ashes exceed the garbage to an extent which prevents combustion. The practice of the department of only cleaning out the garbage barrels twice a week is one which tends to the undue accumulation of refuse.

The latest phase in the garbage situation was the total arrest of its removal by the Health Department for want of funds. Under these circumstances, the matter has been taken out of the hands of the Health Committee by the Mayor and placed under the control of the Road Department. We hope that the Road Department which has the cleaning of the streets, may do better with the garbage than the Health Committee. Why one department should clean the streets and another the lanes, we never could thoroughly comprehend. The cleaning of the lanes and incineration of garbage seems properly to belong to the Street Cleaning Department, who should be made to do it in a way consistent with the health of the city. In like manner the Water Department may safely be intrusted with furnishing water

with the understanding that they furnish a supply which the Health Department will approve of.

If the Road Department succeeds in dealing effectively with the garbage, by all means let them continue to do so. In that event the Health Committee may at last find some leisure thus to bestow some attention upon sanitary matters proper. For instance, they might exercise a little supervision over the quality of our water supply which just now seems to require it.

As to the abstract question of garbage disposal, the general consensus of opinion among sanitarians, is that it would best be dealt with by the householders burning it in their own kitchen stoves and that the whole garbage problem largely arises out of slovenly housekeeping. Any householder who wishes to consume his own garbage can do so with the aid of his cook, and if all the houses in one block combined to do this there would be no nuisance in that block, and a little apparatus designed for this purpose by Dr. Durgin, of Boston, will, if introduced into the kitchen stove-pipe, materially help him in this task.

### POSTPONEMENT OF THE THIRD PAN AMERICAN MEDICAL CONGRESS.

INTERNATIONAL EXECUTIVE COMMISSION OF THE PAN AMERICAN  
MEDICAL CONGRESS.

OFFICE OF THE SECRETARY.

CINCINNATI, Nov. 5th, 1898.

SIRS:

I have the honor to announce that in April, 1898, I received from Dr. José Manuel de los Rios, Chairman of the Committee on Organization of the III Pan American Medical Congress, a request that, in consequence of the then existing rebellion in Venezuela, no definite arrangements be made at that time relative to the meeting of the Congress previously appointed to be held in Caracas in December, 1899.

The following communication relative to the same subject is just at hand:

CARACAS, September 25, 1898.

DR. CHARLES A. L. REED,

Secretary of the International Executive Commission, Cincinnati,  
Ohio.

DEAR SIR:

After having sent my communication dated April last, I find it to

be my duty to notify you that, although the considerations pointed out in it have already ended, our country has been scourged by small-pox. which has taken up all our physicians' activities and time. depriving them of going into scientific works. And, as that state of mind of our people and government after such calamities as war and epidemic, would greatly interfere with the good success of our next meeting, I beg leave to tell you, in order that you will convey it to the International Executive Committee, that our Government and this Commission would be grateful to have the meeting which was to take place in Caracas in December, 1899, adjourned for one year later. I am, dear Doctor,

Yours respectfully,

THE PRESIDENT.

(Signed) DR. JOSÉ MANUEL DE LOS RIOS.

In accordance with the request of the Government of Venezuela and of the Committee on Organization, the III Pan American Medical Congress is hereby postponed to meet in Caracas in December, 1900.

For the International Executive Commission.

CHARLES A. L. REED,  
Secretary

## Obituary

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HENRY P. WRIGHT, M.D.

Our many readers will, ere this, have learned with regret of the unexpected early death of Dr. Henry P. Wright, of Ottawa, a well known and much loved physician.

He was a remarkably fine character in many ways, and it is not too much to say that he was admired and respected most by those who knew him best.

His extraordinary capacity for sustained professional work led him into the common error of overtaxing his vital powers. After his customary hard days-work, a late dinner party at Government House and a wind-up at a medical friend's house, where he was warmly welcomed by a large gathering of physicians, he retired to bed in the small hours and expired quietly and painlessly, no doubt from an arrested heart action.

Dr. Wright was a well known practitioner and had a warm place in the affections of many in the profession outside of Ottawa, where he laboured conscientiously for over 25 years. To his patients who received his unremitting care he was all in all; and the astounding outburst of affection shown by the populace at large at his funeral, when the cathedral at Ottawa was filled to the doors and then could not contain the mourners, spoke far more than words can tell of the loss the community had sustained.

Dr. Wright was born in Toronto and educated for the most part at the High School in Quebec. Entering the University of McGill College as a medical student at the age of 16, he graduated with honors, taking the final prize in 1871, and at once began practice. For a short time he settled in Mooretown, but soon came to Ottawa, where he made a reputation not easily simulated by ordinary men. He was fond of hospital work, and for many years occupied a high place on the staff of the County of Carleton General Protestant Hospital.

He was President of the Canada Medical Association in 1885.

Owing to a disagreement with the Board of Directors of the above-named hospital, he, with the entire staff, resigned in December, 1896, and largely to his force of character and earnestness of purpose St. Luke's General Hospital was organised. Dr. Wright lived to see St. Luke's consummated, and was chairman of its Medical Board at the

time of his death, as well as a life member of its Board of Governors. The success of this new hospital was very dear to him, and his last words at Dr. Powell's house were spoken in response to the toast of his favourite institution, when he predicted for it a useful and honorable career.

The best memorial to Dr. Wright is St. Luke's General Hospital, Ottawa, and already his many friends have started an endowment fund for the support of the Public Wards to be known as the "Dr. H. P. Wright memorial."

R. W. P.

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### GESTA MEDICORUM.

#### "QUICQUID AGUNT MEDICI NOSTRI FARRAGO LIBELLI."

Dr. Charles Ogilvy, of the class of '98, is at present interne at the Orthopedic Hospital, New York.

Dr. C. F. Martin, Lecturer in Medicine, McGill University, having left Berlin, where he was pursuing advanced work, is now at Graz.

Drs. R. Kerry and W. G. M. Byers have been appointed Clinical Assistants in the Ophthalmic Clinic of the Royal Victoria Hospital.

Dr. R. H. Craig who has recently returned from London and Vienna has commenced practice in Montreal.

Dr. Pennoyer, who graduated in '97, and then spent a year in the Montreal General Hospital has begun practice in Buckingham, and we understand, is already doing very well.

Dr. H. S. Birkett, Professor of Laryngology, McGill University, and Laryngologist to the Montreal General Hospital, has resigned the latter appointment to take a similar position in the Royal Victoria Hospital.

Notwithstanding the most elaborate precautions Vienna has been thoroughly alarmed, and with characteristic venom the anti-semitic press is taking advantage of the opportunity to stir up the prejudices of the populace alleging that the disease was imported by Jewish physicians.

The Undergraduate's Medical Society has elected the following officers: Hon.-Pres., Dr. G. E. Armstrong; Pres., F. Tooke, B.A.; Vice-Pres., J. Craig; Sec., J. E. Carnwath; Assist.-Sec., Leggat; Treas., F. S. Porter; Path., A. H. Gordon; Reporter, W. A. Wilkins; Council, Drs. Garrow, Lafleur and A. C. P. Howard, B.A.

Owing to the annexation of Hawaii by the United States, measures are being taken by the Board of Health of California to prevent the

introduction of leprosy which prevails more or less in Hawaii. Dr. Ruggles has been deputed to visit the island and ascertain to what extent leprosy prevails and what measures are necessary to prevent its coming to the United States.

The resident staff of the Montreal General Hospital consists of in Medicine, Drs. H. J. Schwartz and C. A. Peters; Surgery, Drs. W. L. Barlow and A. M. Smith; Out-Patient Surgery and Ophthalmology, Dr. F. W. Harvey; Out-Patient Medicine and Gynæcology, Dr. R. U. Patterson; Pathology, Dr. C. L. Brown; Anæsthetist Dr. W. W. Lynch; Surgical Registrar, Dr. H. W. Thomas.

At the Royal Victoria Hospital, in Medicine, Drs. Robertson, H. B. Cushing, B. W. D. Gillies, and W. O. Rose; Surgery, Drs. E. W. Archibald, C. H. Brown, J. J. Roy and C. B. Keenan; Gynæcology, Drs. Barclay and Frazer; Ophthalmology, Dr. Smith.

The recent outbreak of Plague in Vienna has proved somewhat alarming, but it would look as if the precautions taken had been sufficient in as much as no new cases have developed. It began with the case of Barisch a "diener" in the pathological department attached to the Klinik Nothnagel, who became infected while attending to the experimental animals. Two nurses and Dr. Müller, the physician who attended him, took the disease and eventually Barisch's wife and another assistant became attacked. Altogether there have been six cases and three deaths. Dr. Müller who succumbed to the disease was the first assistant to Prof. Nothnagel and was very well-known for his active work. He was specially regarded as an authority on the Plague and on the blood. In 1897, together with Drs. Albrecht, Ghon and Poech, he was sent to Bombay by the Academy of Science to study the Plague.

The medical attendants of the Prince of Wales, have in the opinion of the Queen discharged their duties faithfully and well. Sir William MacCormic and Sir Francis Caking who as surgeon and apothecary respectively to the Prince, have mainly dictated the lines of treatment to be adopted, have been appointed Knights-Commanders of the Royal Victorian Order, and Mr. A. D. Fripp and Dr. A. G. Delmage, Fleet-Surgeon in the Royal Navy, who have had charge of the Prince during his extended yatching tour, have been appointed members of the same order. The Royal Victorian Order is a new order of Knighthood founded by the Queen a few years ago, and appointments in it are made exclusively as rewards for personal service to the Royal Family. These decorations should heal the wounds made by Dr. Lucas-Champouinière in his severe criticisms of these gentlemen because they did not wire the fragments of the patella.

Canadian medicine and medical men were well to the fore in the proceedings at the recent meeting of the British Medical Association at Edinburgh; Dr. Peter's demonstration of a new and rapid method of making casts from anatomical and pathological specimens created wide interest, so that he had to repeat the demonstrations frequently. Dr. McCarthy's paper read by Dr. Shepherd upon the structure of the Hippocampus Major was perhaps the most novel contribution to the anatomical section, and the same may be said of Dr. Adami's paper read by Dr. Osler upon the Bacteriology of Cirrhosis in the medical section. In the physiological section Prof. A. B. Macallum contributed an article upon "Some points in the micro-chemistry of nerve cells," bearing upon the observations of one of his pupils, Mr. Scott, pointing out that Nissl's spindles in nerve cells are derived from the nucleus of the cell and are of the nature of a nucleo-proteid. He also brought forward in this connection, the most important work recently done by him upon the micro-chemical determination of the presence of phosphorus in these and other bodies. Dr. Shepherd took an important part in the discussion on the significance of Anatomical Variations.

At the October meeting of the Provincial Board of Health, among other business the following was enacted:

"The Provincial Board could not entertain the request made by the Health Department of Montreal to examine dairies supplying milk to their city and situated outside their limits, but will offer to give the city officials, whose work it should be, the necessary authority to visit the various dairies in which Montreal is interested in whatever parish they may be situated."

It was resolved to make it as widely known as possible, through the press, that the Board absolutely condemns the long tube feeding bottle for infants, and to earnestly recommend pharmacists and others to stop selling them, in the name of humanity, calling their attention to the fact that in some countries their sale has been prohibited by law.

It was decided to amend the by-laws of the Board, so as to require the disinfection of urine in typhoid fever.

The president called attention to the fact that there had been a remarkable increase of typhoid this year in Montreal, and as an increase in typhoid prevalence always points to the possibility of contamination of the water supply, it was decided on the suggestion of the president, to recommend to the city of Montreal to make a full investigation of their water supply, to determine if the time has not come either to purify the water by filtration previous to its distribution, or to give up entirely the St. Lawrence river water and bring water from the lakes or other sources above all suspicion.

## NEW BOOKS, ETC., RECEIVED AND NOTED.

A Manual of Otolgy. By Gorham Bacon, B.A., M.D. With an Introductory chapter by Clarence John Blake, M.D. New York and Philadelphia, Lea Brothers and Co., 1898.

A Text-Book of Materia Medica, Therapeutics and Pharmacology. By George Frank Butler, Ph.D., M.D. Second edition, revised. Philadelphia, W. B. Saunders, 1898.

Medical Diseases of Infancy and Childhood. By Dawson Williams, M.D., London. Lea Brothers & Co., Philadelphia and New York, 1898.

A Clinical Manual of Skin Diseases, with Special Reference to Diagnosis and Treatment for the Use of Students and General Practitioners. By W. A. Hardaway, A.M., M.D. Second edition, revised and enlarged. Lea Brothers & Co., Philadelphia and New York, 1898.

A Treatise on the Science and Practice of Midwifery. By W. S. Playfair, M.D., I.L.D., F.R.C.P. Seventh American from the Ninth English Edition. Lea Brothers & Co., Philadelphia and New York, 1898.

Practical Diagnosis. By Hobart Amory Hare, M.D. Third edition. Lea Brothers and Co., Philadelphia and New York, 1898.

Pathology and Morbid Anatomy. By T. Henry Green, M.D. Lea Brothers and Co., Philadelphia and New York, 1898.

The Medical News Visiting List, 1899. Lea Brothers & Co., Philadelphia and New York, 1898.

American Pocket Medical Dictionary. Edited by W. A. Newman Dorland, A.M., M.D. Philadelphia, W. B. Saunders, 1898.

The Care of the Baby. A Manual for Mothers and Nurses. By J. C. Crozer Griffith, M.D. Second edition, revised. Philadelphia, W. B. Saunders, 1898.

Practical Urinalysis and Urinary Diagnosis. A Manual for the Use of Physicians, Surgeons, and Students. By Charles W. Purdy, M.D., L.L.D. Fourth revised edition. Philadelphia, New York and Chicago, The F. A. Davis Company, 1898.

Histology, Normal and Morbid. By Edward K. Dunham, Ph.B., M.D. Lea Brothers and Co., New York and Philadelphia, 1898.

Transactions of the Association of American Physicians. Thirteenth Session. Vol. XIII. Philadelphia, Printed for the Association, 1898.

Transactions of the American Surgical Association. Vol. XVI. Edited by De Forest Willard, A.M., M.D., L.L.D. Printed for the Association, 1898.

Cleft Palate. Treatment of Simple Fractures by Operation. Diseases of Joints, Antrectomy, Hernia, etc., etc. By W. Arbuthnot Lane, M.S. London, The Medical Publishing Company, Limited, 1898.

Essentials of Materia Medica, Therapeutics and Prescription—Writing arranged in the form of Questions and Answers prepared especially for Students of Medicine. By Henry Morris, M.D. Fifth edition, revised and enlarged. Philadelphia, W. B. Saunders, 1898.

A Primer of Psychology and Mental Disease. By C. B. Burr, M.D. Second edition. Philadelphia, New York, Chicago, The F. A. Davis Co., 1898.

Affections Chirurgicales du Tronc, Statistique et Observations Par le Dr. Polaillon. Paris Libraire, Octave Doin, Editeur, 1898.

Glaucoma, with Detachment of Retina. By William Cheatham, M.D. Reprinted from Annals of Ophthalmology, July, 1898.

Orthoform and Extract of Suprarenal Glands. By W. Cheatham, M.D. Reprinted from the American Practitioner and News, August, 1898.

Insomnia. By I. J. Higgins, A.M., M.D. Reprinted from the Journal of Medicine and Science, August, 1898.

Chloroform, Its Absolutely Safe Administration. By Robert Bell, M.D., F.F.P.S. Glasgow, Robert Love Holmes, 1898.

A Contribution to the Study of the Symptoms of Chronic Urethritis. By Ferd.



C. Valentine, M.D. Reprinted from The Journal of the American Medical Association, August, 1898.

The Aseptic Animal Suture, Its Place in Surgery. By Henry D. Marcy, A.M., M.D., L.L.D. Reprinted from the Journal of the American Medical Association, August, 1898.

Honymous Torsion, A Position of the Retinal Meridians hitherto unrecognized. By Edward P. Brewer, M.D., Ph.D. Reprinted from Ophthalmic Record, September, 1898.

Statistique des Opérations Pratiquées au Mans du 1er janvier au 31 décembre 1897, par H. Delagénier. Reprinted from Archives Provinciales de Chirurgie, March, 1898.

Notes on Malaria in Connection with Meteorological Conditions at Sierra Leone. By Surgeon-Major E. M. Wilson, C.M.G. Second edition. London, H. K. Lewis, 1898.

A Text-Book of Pathology. By Alfred Stengel, M.D. Philadelphia, W. B. Saunders, 1898.

The Natural History of Digestion. By A. Lockhart Gillespie, M.D., F.R.C.P. Ed., F.R.S. Ed. London, Walter Scott, Ltd., 1898.

Manual of Diseases of the Skin, with an Analysis of Twenty Thousand Cases and Formulary. By I. Duncan Bulkley, A.M., M.D. Fourth edition, revised and enlarged. G. P. Putnam's Sons, New York and London, 1898.

A Pocket Medical Dictionary. By George M. Gould, A.M., M.D. Philadelphia, P. Blakiston's Son & Co., 1898.