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## Original Communications.

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### OPIUM IN INDIA.

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BY ROBERT D. RUDOLF, M.D. EDIN.,  
TORONTO.

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Mr. President and Gentlemen :

I HAVE no intention in this communication of discussing the pharmacology and therapeutics of opium, nor yet of mentioning the diseases in which it is indicated or otherwise, but would ask you to bear with me for a short time, while I give you the knowledge of the drug which I picked up while living in India. During the five years that I was there I resided in Behar, where the best Indian opium is grown and where many thousands of natives and a few Europeans are employed in the cultivation of the white poppy, (*Papaver Somniferum*), from which opium is obtained.

Just at this season of the year, when, after the cold weather, the climate is becoming tropical again; the little fields round thousands

of native villages will be white with poppy blossoms, and the heavy, sweetish odor from these is as characteristic of the season as the smell of a hay-field is of June. The fields are prepared in December with the greatest care by the native and his family, and when the ground is so fine that not a lump the size of a walnut remains, they mark the surface off into oblong beds about six feet by four feet, and the ridges between these beds are trenched to allow of the free passage of water, for all opium is grown by irrigation. This irrigation is usually from surface wells.

The seed is sown broadcast early in January, and in three or four days comes up. When the plants are about two inches high, most of them are weeded out by hand, and only one plant to every square foot or so is left. The irrigation is continued every two or three days until the blossoms fade and the heads appear. When fully grown, the plant is about four feet high. The blossoms all come out nearly at the same time, so that a whole field, which was pale green one day, is white the next. The petals of the blossoms are collected by gently removing them by hand from the capsules, never plucking them off forcibly, as this would injure the latter. These petals are then handed over to the women of the family, who, seated in front of circular iron plates placed over a slow fire, dab the petals on one by one, pressing them with a damp roll of cloth. When fresh, the petals are gummy, the heat makes them stick together, and the moisture being driven out they form circular cakes, technically called "leaves," eight inches to fourteen inches in diameter and .5 to .3 inches thick, which are used in making the shells of the opium cakes at Patna.

Next the poppy juice must be collected, and this is a very critical operation, and all the native household is pressed into the service. Each person is armed with an instrument having two or three sharp points, so that one stroke of it makes two or three parallel scratches. Thus armed, they go into the fields in the afternoons, when the sap is rising best, and lightly scratch each poppy capsule on two or three sides in a vertical direction. This is a very tedious job when a man has several acres of poppy under cultivation, and all the village, from old men and women who can scarcely stand, to children who have barely learned to do so, are pressed into the work. The work is urgent, for a whole field becomes ready for the extraction about the same time, and it must be all accomplished in a very few days, or the capsules will dry up and much of the juice will be lost. When the capsule is lanced, a white juice about the consistency of glycerine slowly exudes, and this partially dries and turns brown.

Next morning the harvesters return and scrape off the crude opium this they smear on to the palms of their hands, and when they have got together a good collection, they put it into earthenware dishes. This collecting is done with blunt knives like bits of hoop iron. Each set of incisions in a capsule yields about  $1\frac{1}{2}$  grains of crude opium, and the scarifications are repeated several times—until the juice ceases to flow. As thus collected, opium is a granular, rose-red liquid containing 49-51 per cent. of moisture. The poppy plant now rapidly fades and is soon cut down and broken up, and is sent in to be used for packing opium cakes. The seeds are pressed for poppy oil, or are kept for the next year's sowing. After pressing, the residue is used as food for cattle. The land is at once cultivated again and probably indigo is sown—what strikes one specially in Indian agriculture being that the soil is given no rest, one crop following another in constant succession.

The opium trade of India is a government monopoly, and is worked by a department of Europeans, assisted by a great number of minor native officials. These grant licenses to the cultivators, without which they are not allowed to grow the poppy. They also advance money to enable the cultivators to meet the expenses of preparing the land, etc. They measure all the land after it has been sown with poppy, and thus check any cheating, in that a native cannot get an advance on a greater piece of land than he actually cultivates. All the opium that is collected must be taken by the natives to the government go-downs (or warehouses), where it is weighed and carefully examined to see that it has not been adulterated. In spite of this barrier, adulteration is a common thing and the substances used for this purpose are very numerous, of which gum acacia, bael, betel, the juice of several milk-yielding trees, raw sugar, ghee (branded butter), flour, linseed, brick dust, and even cow dung may be mentioned.

The examiners at the warehouses become very skilful in detecting adulteration by the senses of sight, touch and smell, and use no chemical tests there.

All the opium is, at the warehouse, roughly divided into three qualities, according to its consistence—the most solid being the best—and the value is placed to the credit of the grower, and he is paid that amount in cash, less the advance, which he received earlier in the season. The officials then put the opium into great earthenware jars, each containing eighty pounds, and these are carefully sealed, and then sent by boat or train to headquarters at Patna under a guard of police.

Arriving here, the opium, after being carefully check-weighed, is searched and again classified, first by hand—and the men to do this work can from long experience tell to one degree the consistence of any specimen—and then is classified again on a steam table.

Dr. Manyard, the officiating factory superintendent, thus describes this second examination :

“ These tables are shallow iron chambers, inside of which steam circulates, and on top of which rest white china plates. A specimen of a hundred grains of opium dried to a powder on these shows by its loss in weight the amount of moisture it contained. Thus, if 100 grains result in 80 grains, we say the consistence of that opium is 80°, *i.e.*, it contains 20 per cent. of moisture, and it is on this consistence that the assami is paid. The same weight of opium at 80°, of course, being more valuable than at 50°. Every specimen in addition to the assay is also carefully tested for impurities, and not until a certificate of purity is received back from the laboratory can any single jar of opium be passed into the *malkhana* storing vats, where opium of different classes (each class including 3° of consistence) is stored in different vats. Each class bears a distinctive name, thus *awal* includes opium of consistence, 70°, 71°, and 72°, *darawal*, 73°, 74°, and 75°, and so on. This classification and examination of the opium takes place in April, May, and June—as many as 1,200 and even 1,800 jars (maunds) being disposed of daily. Good opium, as thus received at the factory, is a moist, granular, rich mahogany-brown colored substance, varying in consistence according to the inspissation it has undergone, from that of thick pea-soup to that of putty; the consistence also rising with the amount of *pasewha* present. The color varies with the age of the opium (darkening with age), amount of *pasewha* (darker the more there is), soil on which grown (lighter from high land only recently cultivated), but is never black unless adulteration has occurred. The texture varies from the distinctly granular to the homogeneous, but when the opium is pure is always uniform. Its variations depend upon the amount of *pasewha* present, but more especially upon the manipulation the opium has undergone, the grain being destroyed by prolonged manipulation. The texture is usually determined by taking a specimen in the palm of one hand and spreading it out with the fingers of the other, or with a spatula. Pressed between the finger and thumb, opium is sticky and viscid and draws out in fine threads, which break with a ragged fracture, and by the appearance of these the Chinese in part judge of the nature of the drug. The smell of fresh opium is strong and peculiar, rather agreeable, fruity it has

been called; and with less justice narcotic, as it rather stimulates than narcotizes, at any rate when first smelt. Its taste is also peculiar and bitter. Pressed between two glass slides, it is translucent and of a reddish-brown color. The same result may be obtained by smearing a piece on a white china plate with the finger when any blackness or grittiness indicating adulteration is at once revealed.

“Starch is also said to be detectable by the naked eye in these ways, and no doubt can when present in a very large amount, but it is unreliable.

“Microscopically opium macerated in glycerine shows as a brown amorphous or granular substance in which are to be seen large crystals—either single tablets with pointed ends resembling ammoniaco-magnesian phosphates (as figured in Sir W. Roberts’ book on Urinary Diseases) or in tufts resembling stars of uric acid. There are also flat, square, tabloids. A few starch grains resembling arrowroot or tapioca, may generally be found, also refractive globular bodies said to be resinous, and now and again particles of vegetable fibre.”

In addition to this opium, there are a number of varieties sent in, *e.g.*:

(1) *Khurchan*, which is the scrapings from the earthenware dishes of the natives.

(2) *Pasewha*, that is, an acrid kind of opium, which rises in the capsules during an east wind, and which, although very pure opium, is disliked because it is hygroscopic, and hence unfit for the interior of opium cakes.

(3) *Kuffa*, that is, pieces of cloth which have opium adherent to them. If clean, the opium is washed out and used for alkaloidal manufacture, otherwise it is confiscated and burnt.

(4) *Burned Opium*, usually from accident.

(5) *Contraband Opium*, seized in Bengal or Assam.

(6) And lastly, *Adulterated Opium*.

All opium at Patna is specially prepared to meet the three uses, (1) provision for the China market; (2) excise opium for use in India; (3) medical opium. This last is of two kinds—cakes and powder—and is made from opium of highest consistency and lightest color. It is spread out on shallow wooden trays in the shade, carefully protected from the dust, and kneaded by hand every few days until it rises to 90° consistence. This takes months to effect, and it is then pressed in a hand-press into cakes of two pounds weight each, wrapped in Nepaul paper, and issued to medical storekeepers. The powder is simply opium dried to a powder on plates on the steam table, and is pure opium at 100° consistence.

The opium for use in China and India is sent out at the standard strength of 75° (25 per cent. of moisture). It is made into balls weighing two pounds each, and these are packed in boxes among opium plant straw. This opium is despatched to Calcutta and there sold to Chinese and Indian buyers at the monthly Board of Revenue sales.

Opium, not suitable for any of these three purposes, confiscated opium, and *pasewha* is all sent to Ghazipur, where it is used for the extraction of alkaloids.

As regards the *composition* of Indian opium, it is peculiar in containing less morphine and more narcotine than the Smyrna variety. It contains more morphine than Chinese or Persian opiums, and much more narcotine. This excess of narcotine in Indian opium is well worth noting. Narcotine has a more convulsive and less narcotic action than morphia. Squire, in his Companion to the British Pharmacopeia, states that it has no narcotisine action at all, and hence has been sometimes called Anarcotine.

Bihar, that is, Patna, opium, when thoroughly dried, contains 5.16 per cent. by weight of morphine against 9.64 in Smyrna opium. On the other hand, Patna opium contains 8.24 per cent. by weight of narcotine, and Smyrna opium only 2.26 per cent.

The opium belongs to the Government from the first, and a large staff of officers are employed to prevent the local sale and use of it by the cultivators. But with all these precautions, a certain amount is used thus, and the presence of the dish of opium in the hut not infrequently tempts natives—usually women—to steal enough to do away with themselves. It is also a fairly commonly used poison in cases of murder, although arsenic is the commonest here.

A good crop of opium is the most profitable one that can be grown by the villagers, but the risks are many, and it is seldom that a man secures a perfect 16 anna harvest. A 16 anna means a perfect one from the idea that there are 16 annas in the rupee. A 12 anna crop would thus be a 75 per cent. one.

But the poppy plant is a very delicate one and its life and development are endangered by many things. Thus the ground must be very rich and contain a good deal of natural moisture or the seed will not germinate. When the plants are above ground, a cold spell of weather may kill them. Later on the blossoms may be destroyed by hail, heavy rain, or high wind; but the most risky time of all is when the capsules have been lanced and the opium is lying on the surface. Then a heavy rainfall will wash most of it away, or a high

wind blowing the plants about may rub them against each other and knock quantities of the opium off. Thus a native who trudges home with the price of a good crop tied up in his loin cloth may truly breathe his thanks to his gods, and probably will offer up some simple sacrifices to their images. If, on the other hand, he has received little or nothing; or even is in debt to Government for part of the advance he has already got, he will quietly make his way back to his village, muttering "*kismet, kismet*" (fate, fate), for the native of India is a great fatalist.

The two great races in India, Hindoos and Mohammedans, use opium largely as an habitual stimulant, as a necessary part of many social ceremonies, as a prophylactic against disease, and as a therapeutic agent.

The exact date on which opium was introduced into India from Asia Minor is doubtful. Some believe that the Rajputs (who are high caste Hindoos) used it over 2,000 years ago. There is no evidence, however, of the plant being cultivated in India before the sixteenth century, and it was probably then introduced by the Arabs, who also took it first to China.

(1) The *use of opium* has been for long intimately connected with the *social functions* of many classes of Indians. Dr. Norman Chevers, in his "Medical Jurisprudence of India," tells us that *Amal-lar-khana*, "to eat opium together," is the most inviolable pledge amongst the Rajputs, and an agreement ratified by this ceremony is stronger than any adjuration. If a Rajput pays a visit, the first question asked or words uttered are *Amal kya*, "have you had your opiate." On a birthday, when all the chiefs convene to congratulate their brethren on another link being added to the chain of years of their age, a large cup is brought forth, a lump of opium is put therein, upon which water is poured, and by the aid of a stick, a solution is made, to which each helps his neighbor, not with a glass, but with both of his hands held to the mouth. The practice of *Amal-lar-khana* was also a social indication that all enmities were at an end; it was the seal of renewed friendship between individuals or tribes among whom hostilities had previously prevailed.

In July, 1892, the Calcutta Medical Society held a discussion on the use of opium, in which several native medical men spoke of its social use. Dr. Chunder Bose, the president of the society, spoke as follows :

"I cannot find from records when the drug was introduced as a social necessity in this country, but I am in a position to state that opium is indispensable in the reception of chiefs, nobles, and men

of rank amongst the Rajputs, the Marwarees, and the Mohammedans of the central provinces, and of Surat and Ahmedabad. The process of welcoming guests with opium, either in the form of decoction or highly-scented extracts, is called *Kussoba*. The host himself takes the gold or silver cup filled with the preparation of opium, and goes round the party, distributing spoonfuls to each one of his guests, who drinks it to the health of his host. Infants' and little children's right to the *Kussoba* is not denied by the host. The process is meant to remove anxieties from the mind and to bring about a state of hilarity.

"Different sects of people observe different modes of eating the drug; some take it in its crude state, whilst others soak it in water or milk, and then drink the fluid and throw away the residue. The well-to-do class keep a separate formula for preparing their own opium; they take a quantity of good opium, mix it up with the powdered seeds of cardamom, bamboo camphor, *Bangsolochun* musk, camphor and saffron to the consistency of a pill mass, and then make pills or boluses according to the dose which they take. These ingredients are added to the drug with the view of augmenting its virtues. The zemindars and the rajas and nawabs of Bengal boil opium in milk, and then they eat the cream only. The process of smoking *madat*, otherwise called *goolie*, is simple, whilst that of smoking *chandu* is involved and difficult. *Madat* smokers in this part of the country are of a low class, and generally shunned, whilst the *chandu* smokers are generally better off though of depraved morals."

Thus it will be seen that opium takes much the same position in social ceremonies in India as alcohol does amongst western nations.

(2) As an *habitual stimulant* the drug is very largely used amongst some classes, e.g., the Marwarees (bankers) and Sikhs (fighting men) the practice is almost universal. In Behar itself, where opium is chiefly grown, about five per cent. of the Hindoos and thirty per cent. of the Mohammedans habitually use the drug in daily doses of from two to ten grains, and once the dose which suits the individual is reached it is not common for him to exceed it. Occasionally, however, one hears of enormous doses being regularly taken. There are people in India who take their two, four, six, and even eight ounces of solid opium daily, and one case was recorded by Dr. Crombie of a man who ate nine ounces and 225 grains daily, without developing any poisonous symptoms whatever.

It is taken usually in the form of the crude drug made into pills,

and half is taken in the morning and the rest at night, half an hour before food. The result is that the drug mixes with the food and thus is very gradually absorbed. When a native commences to take opium the effect at first is to cause constipation and a drying up of the secretions, but after a week or two of habitual use these untoward results wear off and the drug seems to actually stimulate peristalsis. The habitual taking of opium is usually commenced after the age of thirty, very often, to commence with, as a treatment for disease, and is then probably continued for the rest of the man's life. The effect of moderate use on the *native* seems, on the whole, a harmless one. The man, as long as he takes his dose regularly, is capable of the highest mental and physical exertion. If, however, his dose be withheld he suffers extremely.

Prolonged indulgence in the habit does not seem to produce any definite tissue changes which can be detected post mortem. As regards the effect on the brain, some interesting statistics were produced by Dr. Crombie, of Calcutta, for the use of the Royal Commission on Opium that sat some three years ago in India. I may summarize them as follows :

Of the total admissions of 2202 into the lower Bengal asylums during the ten years 1881-1890, 641 were ganja (Indian hemp) smokers, 117 were spirit drinkers, and eight were opium eaters. In other words, 29.1 per cent. used ganja, 5.3 alcohol, and only .35 were opium eaters. Of the 800 admissions during the three years, 1888-90, into the Bombay Presidency asylums, 132 were ganja smokers (16.5 per cent.), 56 (or 7 per cent.) were spirit drinkers, and six (or .75 per cent.) were opium takers—of these six cases attributed to opium, five were from the city of Bombay itself, leaving only one for the rest of the province and he belonged to Hyderabad, in Sindh, where the opium habit is almost universal. In the Madras presidency during the year 1888, the total admissions were 168, and of these 7.1 per cent. were from ganja, 6 per cent. were alcoholics, and *none* took opium. In the Rangoon asylum, the only one in Burma, the total admissions for the six years ending 1890, were 541, of which 2.9 per cent. were attributed to ganja, 5.91 to alcohol, and .92 to opium. The city of Rangoon contains about 15,000 Chinamen, and yet not a single Chinaman was admitted to the asylum during these six years, although a large number of them smoke opium.

To summarize these figures : out of 3711 admissions to the various asylums, 801 cases were attributed to ganja, 215 to alcohol, and only nineteen to opium, and these figures are the more remarkable

when we consider how little alcohol and ganja are used compared to opium. Dr. Crombie remarked before the commission that, in his experience, it would be "almost justifiable to advance the theory that one of the advantages derived from the native habit of eating opium is a diminished liability to insanity."

As regards the influence of opium eating on longevity, Dr. Roy Moy Roy, himself an opium eater, has compiled a table of 215 habitual indulgers who had come under his own observation, and it is remarkable on looking through these tables to notice how many of the individuals have reached and exceeded the expectant period of life, as taken from English tables, and of course it must be remembered that the expectancy of life in England is considerably greater than in India.

The table includes one man who at the extreme age of 106 years died a violent death. He was in full possession of his senses and in good health considering his age, and used to manage a large estate of his own. His custom was to take 180 grains of opium daily, and this he had done for sixty-six years.

The Zantras—the religious books of one of the large sects of Hindoos—have authoritatively laid down that the practice lengthens life.

One great reason, it seems to me, why opium has been credited with tending to longevity is that it so often acts as a prophylactic to disease. When natives have to undergo any great physical hardship or exposure to cold and damp, they take opium, under the firm belief that it helps them to bear up under these difficulties.

The boatmen on the great rivers take it regularly, and they are a happy, healthy and contented lot of men. "They begin work at six a.m., and will often work a large, heavy house-boat, dragging it the greater part of the day against the current till eight p.m., on a hasty meal, snatched at midday, and an occasional chew of opium, all the time happy, jolly, and contented."

Dr. Moir, of Calcutta, says :

"Opium is taken very commonly with a view to lessen fatigue and hunger in prolonged hard work or long marches. The Bhutia and Gurkha coolies in Lushai land stipulated for opium in their rations, because they were accustomed to it; because they believed it lessened fatigue in carrying heavy loads long distances in that hilly country, and because they thought it lessened their susceptibility to fever and did good in fever. The authorities wisely allowed them to have a fixed daily opium ration. I never saw any of these coolies suffering from any symptoms that could be attributed to eating opium, though I have seen some of them beastly drunk."

*Smoking of opium* is not very prevalent in India, but in some of the large towns it is practised. Either they smoke *chandu*, which is a watery extract of opium from which the oily matters have been removed by heat, or *madat*, which is also a watery extract pounded up with charred guava or vine leaves. The former method is practised by the better class, the latter by the lowest classes.

*Pure morphia* is little used by natives, but the Bengalee baboos of Calcutta have found it out, and many of them take this most insidious drug in doses of five to fifteen grains daily. As regards large doses of morphia, a Maharajah who died lately at a good old age, used to take twenty-six grains daily, and was a good sportsman and a first-class shot.

(3) As a *prophylactic*, opium is very largely used in India, as well as in other countries, and there seems no doubt that it does act in this way against malaria, rheumatism, dysentery, and cholera. As to the exact way in which it acts on the system in exerting its protective power one can only theorize, but the belief is well nigh universal in the East that an opium eater is less apt to suffer from these diseases than one who does not so indulge. This belief is not confined to the East, for opium is largely used in the fen districts of England for this very purpose, as stated by Dr. Lauder Brunton. In the *British Medical Journal* for July, 1881, Dr. Murrell draws attention to this fact, and points out that phthisis is very uncommon amongst these opium eaters.

Dr. Crombie wrote as follows:

“During sporadic outbreaks of cholera amongst the people of Burrobazar, the victims are those who are either abstemious in their habits or are bhang eaters and ganja smokers. The opium eaters who often closely attend upon patients, are not affected by the disease. A few months ago a party of twenty men, of all ages, one morning started from No. 9 Hanspooker Lane to Kalighat, to visit the goddess, and returned during the night. They prepared one kind of food, and all of them ate it. Early next morning nine of the party got cholera, and succumbed to it, whilst the rest escaped. On enquiry it was found that those who escaped were habitual opium eaters. But opium eaters, during the last epidemic of influenza, suffered most severely, and some succumbed to the disease.”

During the Poojah season people come to Calcutta from the Terai of Jalpaiguri and Sotatia for treatment of Terai fever and enlarged spleen. The history they give of their illness is interesting. They say that because they have not listened to the advice of opium eaters they are destined to suffer and to die prematurely, for in the Terai the opium eaters are the healthiest of men.

In the Central Provinces and Bombay pills of opium, the size of poppy seed, are given to the children from the first, and the dose is gradually increased to one grain. The practice is continued until the age of four years. From that age until after thirty opium is seldom used, except in the treatment of disease. It is thus given to children in the belief that it renders them less liable to tetanus and diarrhœa.

The prophylactic action of opium against malaria is probably largely due to the narcotine it contains. Narcotine, in doses of five grains or so, has often been used in the treatment of this disease.

Dr. Hehir, of Hyderabad, writes thus: "In malarial-poisoning there appears to be a hypersensibility of the general vaso-motor centre, so that a draught of cold air blowing on the surface, slight gastric irritation, or even slight distension of the bladder, will cause contraction of the cutaneous vessels, and shivering, in one suffering from such poisoning. Opium appears to be useful in such conditions, probably by lessening the excitability of the general vaso-motor centre. This exalted condition of irritability of the general vaso-motor centre is one very commonly met with in Hyderabad and its suburbs, and being the determining cause of many of the cases of ague met with, we may often ward off attacks of ague by giving *sedative* doses of opium to lessen those chemical, vital, functional, or metabolic changes (in the protoplasmic constituents) of ganglionic cells of this special centre) and thereby keep the blood at the surface, a condition incompatible with the manifestations of an attack of ague."

So much for the habitual use of opium by the people of India. The question naturally arises, how is it that the drug can be used with so much benefit and so little harm by these people, when the opium habit, or, at least, the morphia habit, is so easily acquired by Western nations, and is so dreadful in its results. One reason for this is, undoubtedly, that the opium of India (and also of China) contains much less morphine, but more narcotine, than do other kinds. But I believe that the great reason for the comparative innocuousness of opium on Eastern nations is that it is, so to speak, their *natural* stimulant. It seems as if every people must have some stimulant, speaking generally—take, for example, coca in South America, kola in Africa, and alcohol with western nations. And as long as they keep to their own stimulant, the minimum of harm (though often great harm) is done; but if one nation adopt the stimulant of another, great havoc ensues, and the people seem unable to resist the desire to take an excessive amount of that stimulant.

Alcohol, fortunately is forbidden to most races in India, but where this is not the case and they substitute it for opium, the results are lamentable. Three years ago an attempt was made by a party in England to make it illegal for opium to be sold in India except for medicinal purposes. The Government Commission which sat in the country on the subject almost unanimously concluded that it was wiser to let things be. With this decision I agree, and hold that the harm and hardship caused by such legislation would far exceed any benefit which might accrue. If the natives of India must have a stimulant to assist them in their social functions, to help them through their daily work (in their opinion), and to protect them against disease, then by all means let it be the comparatively harmless opium, rather than the deadly ganja, or the still deadlier alcohol.

## Selected Articles.

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### SERO-DIAGNOSIS OF TYPHOID FEVER.\*

A STUDY OF ITS PRACTICAL CLINICAL VALUE, WITH A  
DEMONSTRATION OF THE BLOOD REACTIONS.

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SIX months have now passed since Widal first proposed and described a new method of diagnosing typhoid fever by means of an examination of the blood. During this period many clinicians and bacteriologists have repeated Widal's observations, and their published reports, so far as I have seen them, have all confirmed his conclusions as to the value and accuracy of the serum test. Early in November last the subject was brought to the attention of the physicians of New York by the action of the board of health, who offered to examine the blood of all cases of suspected typhoid fever occurring in either private or hospital practice in the city. Having at that time a number of cases of the disease in my service at Bellevue Hospital, I thought it an excellent opportunity to study the new test, especially as I had the aid of a zealous and most efficient house staff, that *sine qua non* of all good hospital work. Indeed, if I remember rightly, it was at the suggestion of Dr. Humphreys, the house physician of the first medical division, that we decided to provide ourselves with the apparatus and broth cultures necessary to performing the test ourselves. At the same time, we availed ourselves freely of the assistance so kindly offered by the bacteriologists of the health department. Careful records were kept of our investigations, as it was my intention at the time to present a report of our work to this society. In order that the principles underlying the test may be fully appreciated, I shall also give a short account of the experimental observations which paved the way for the discovery of

\*Read before the Society of Alumni of Bellevue Hospital, January 6, 1897.

Widal, as well as some consideration of the nature of the substances in the serum which produced the reaction.

Chantemesse and Widal were among the first experimenters in this field. In 1888 they succeeded in immunizing animals against the typhoid bacillus by injecting them with sterilized cultures of that bacillus. These observers found later (in 1892) that the same result could be accomplished by means of the serum of patients suffering from typhoid fever or convalescing from that disease. Then followed the observations of Pfeiffer and Kolle, who showed that the serum of typhoid convalescents or the serum of immunized animals, when injected into the peritoneal cavity of guinea-pigs at the same time with a virulent culture of the typhoid bacillus, had the property of immobilizing, agglutinating, and rapidly disintegrating the bacilli in the serous fluid. This reaction is generally known as "Pfeiffer's phenomenon" or reaction. The same serum, injected in like manner with cultures of the colon bacillus, had no such effect, the bacilli remaining isolated and later, Gruber and Durham observed the same immobilizing and agglutinating action upon typhoid bacilli outside the animal body, the mixture being made *in vitro*. There was no action upon the colon bacillus in any of its varieties. Again, Pfeiffer and Kolle showed that if the serum of immunized animals was added to bouillon in certain proportions, and the bouillon was then sown with typhoid bacilli there resulted, after twenty-four hours, a clear fluid with the bacilli precipitated at the bottom of the tube collected into small clumps. Colon bacilli, sown in the same bouillon, caused the usual clouding and preserved their motility. Pfeiffer and Kolle therefore recommended this procedure as a means of distinguishing between the typhoid and the colon bacilli. Widal carried these last observations one step farther, and found that the serum of typhoid patients had on cultures of the typhoid bacillus the same agglutinating action as the serum of animals immunized against typhoid fever. The serum of healthy individuals, on the other hand, or of persons suffering from diseases other than typhoid fever, had no such property. Having arrived at this point, Widal had only to reverse the terms of the problem and ascertain how the blood serum of a given individual acted upon a culture of the typhoid bacillus. If the addition of the serum produced immobilization and clumping of the bacilli in the culture, the individual had typhoid fever or had recently recovered from the disease. If the bacilli were unaffected, typhoid fever could be eliminated from further consideration.

The nature of the agglutinating substances in the serum is an interesting subject of speculation and study. It appears that various

fluids and secretions of the body possess the agglutinating power to a greater or less degree. It is very marked in the fluid of blisters. It has been found in the tears, also in the fluid of the pericardium, peritonæum, and pleura. It is sometimes present in the urine, but not constantly. The action was very marked in the milk of a nursing woman suffering from typhoid, but was not found in the blood of the infant nursed by the woman. The aqueous humor of immunized rabbits gave the reaction in five cases out of nine. Experiments by Widal seemed to show that the power is exerted by the fibrinogen and globulin of the blood, but is wanting in the albumin. On analyzing the milk of immunized goats, the power was found in the lactoglobulin, also in the casein, but was absent in the lactalbumin. Removal of the albuminoid substances, fibrinogen, globulin, and casein, from the body fluids of a case of typhoid fever, removes the agglutinating power from those fluids. According to Pfeiffer, the agglutinating substances are not antitoxines, but are bactericidal bodies, of the nature of ferments, in active and inactive form in the serum. Nothing is known as to the origin of the bactericidal substances, but Pfeiffer maintains that the leucocytes have no part in the process. Other observers have shown that if the immunizing serum be heated to a certain temperature it loses its bactericidal action without losing its power of agglutinating the typhoid bacilli. It is evident, therefore, that this special reaction is not dependent on the bactericidal property of the serum, but is due apparently to the presence of so-called protective bodies, and it is generally accepted that these protective bodies, the alexines of Buchner, are present to a greater or less extent in normal blood serum. Gruber not only believes that protective bodies are found in normal serum, but maintains that these bodies are the direct agents in killing the bacteria which enter the body. In his opinion, the specific substances which result from immunization simply aid the bactericidal action by destroying the outer covering of the bacteria, thus laying them open to the attack of the alexines of the normal body. Pfeiffer also, early in his experiments, found that normal human serum, in doses of three to eight decigrammes, exerted a protective action in guinea pigs of three hundred grammes weight, counteracting the effect of a fatal dose of typhoid bacilli. He holds, however, that the protective action of normal serum and that of serum from typhoid convalescents are not the same; the former simply immobilizes the bacilli and prevents their increase, if given in adequate dose; the latter destroys the bacilli by causing their dissolution or disintegration. There is, therefore, a qualitative as well as a quanti-

tative difference in their action. It is evident from the foregoing statements of various observers that normal blood serum contains substances which act strongly upon bacteria when the latter are introduced into the body. In the case of typhoid bacillus they are able to at least hinder its growth and activity, if not to destroy it. It remains to be seen whether this action is ever exerted outside the body when the serum and the bacilliary culture are brought together in certain proportions.

Before proceeding to recount our own experiments I must refer to some recent observations of Courmont's, as they go to prove that Pfeiffer phenomenon or reaction is not of universal application. Courmont experimented with the serum of nine typhoid patients and found that it invariably gave a positive reaction with cultures of the typhoid bacillus; but it also reacted with the colon bacillus, sometimes very markedly. It also gave a distinct reaction with cultures of the Loeffler bacillus and of the *Staphylococcus pyogenes aureus*, but did not affect the *Bacillus pyocyaneus* or the *Streptococcus pyogenes*. The serum of patients affected with diseases other than typhoid fever had no action on the typhoid bacillus. Courmont therefore concludes that a culture of the typhoid bacillus can be used to determine whether or not a given specimen of blood has been taken from patient suffering or convalescing from typhoid fever—the test of Widal—but he also believes that the fact that the serum of a typhoid patient reacts upon a given bacillus does not prove that the latter is the bacillus of typhoid.

There are various ways of performing the test of Widal, but the principle is the same in all. As already indicated, the test consists in adding human blood serum in certain proportions to a recent culture of the typhoid bacillus, and noting the effect upon the motility and arrangement of the bacilli in the mixed fluid. The culture\* should be only eighteen to twenty hours old in order to get the best results, the bacilli then being in active motion and the broth free from clumps. When sufficient fresh blood can be obtained to give pure serum for the test, the mixing proportions should be one part of serum to ten of the culture fluid. When dried blood is used, one part of serum to three or four parts of culture gives the best results, in my experience. Whatever proportion is adopted should be adhered to, in order that the resulting reactions may always have the same significance. In most of my work I have used dried blood

\*The cultures employed in these experiments were made from laboratory stock cultures which had not been transplanted for some weeks. I note this fact because Dr. Wyatt Johnston has suggested that the false reactions reported by some observers were probably due to the use of stock cultures which had been made active and virulent by frequent (daily) transplantation.

taken from the finger with aseptic precautions. In two cases marked reactions were obtained from the fluid of blisters. The drop of dried blood should be dissolved with a drop of sterilized water, and the fibrin and coloring matter allowed to settle. With a platinum-wire loop four small drops of the culture are placed upon a clean cover glass which has just been passed through the flame. One drop of the clear upper layer of blood serum is then taken and mixed with three of the drops of culture, the fourth drop being left as a control. The cover glass is then inverted over the hollow cell of a glass slide and sealed with oil or vaseline. The hanging drop may then be studied with a quarter or one-sixth objective. I regard it as important to have a control drop on each cover glass side by side with the specimen. It is often desirable or necessary in cases of slow or doubtful reaction to turn to the drop of pure culture and see what changes are taking place there. The method of using dried blood and then redissolving it with water necessarily gives a serum of very uncertain strength. In the majority of cases the reaction is so clearly positive or negative that this rough method answers our purpose. In all doubtful cases, however, I should recommend the use of a blister. The blister fluid can be aspirated in small glass capillary tubes and obtained pure and then diluted to any required strength. Its freedom from fibrin and blood coloring matter is also an advantage. The blister can be made with cantharidal collodion or plaster and causes but trifling pain, as I can state from personal experiment.

The reactions which are observed in the mixture of serum and culture are generally described as either positive or negative, but, in my opinion, a considerable proportion can only be called "doubtful" or "partial." When most of the bacilli are immobilized and formed into clumps within five or twenty or thirty minutes, and the others have either lost their motility or retain simply a sluggish, uncertain movement, the reaction is properly classed as positive, or marked, or typical typhoid. On the other hand, if the activity of the bacilli persists and there is no clumping whatever, the reaction is naturally negative. But in many cases the motility of some of the bacilli is impaired while others remain active. There may also be some loose clumps, but the bacilli forming the clumps may still be in motion. It is, therefore, often impossible to call the reaction anything more than "doubtful." I shall have occasion this evening to describe actual instances of these various forms of reactions, and they will also be demonstrated under the microscope.

The cases forming the subject of our experiments may be divided

into three groups. The first and second groups comprise cases which had been under my own observation or with whose clinical history I was familiar before the examination of the blood was made. The third group is made up of cases of which I knew nothing at the time the specimens of blood were sent to me.

In Group I. are included fourteen cases of individuals suffering from typhoid fever or recently convalescent from the disease. In nine of the cases the blood was tested during the active period of the disease, in one case as early as the eighth day. The reaction was marked in all but one of the nine cases. The case which gave the reaction on the eighth day was a striking instance of the value of the test. The patient was a boy twelve years of age, who had been ill for a week with fever, cough, malaise, pain, and stiffness in the muscles of the neck, and slight diarrhœa, which had been apparently excited by a laxative given at the beginning of his illness. I was called to see him at his home in a tenement house. He had a temperature of  $101^{\circ}$ , a slight cough, and the signs of bronchopneumonia of the right side, but complained principally of the pain in the neck. There were no rose spots, but I thought I could feel the spleen. I examined some of his blood, and the reaction was so marked that I had him sent at once to the hospital. His disease proved to be typhoid of a rather mild type, and the blood gave a positive reaction as long as he remained under observation. I have here a dried specimen of his blood, which still responds to the test, though it was taken from the finger over four weeks ago. I saw the patient to-day, two weeks after he left the hospital, and find that his blood now reacts less than the old dried drop of four weeks ago.

Another case in which the test proved of value was that of a patient who had been in the hospital for eight days without our having been able to arrive at a positive diagnosis. The patient entered the hospital on the 2nd of November with a history of a three weeks' illness, sudden in its onset. His condition on the day of entrance suggested typhoid fever, but his symptoms during the next few days were not what one would look for in the fourth week of the disease. On the 10th of November some of the blood was sent to the Board of Health for examination, and a marked reaction was reported. The further course of the disease sustained the diagnosis of typhoid fever, and repeated tests of the blood gave uniformly a positive result. It is probable that in both of these cases a diagnosis would ultimately have been made from the clinical signs, but the blood-serum test saved us several days of uncertainty.

One case only of the nine, in a private patient of Dr. Henry W.

Berg's, has given an absolutely negative reaction, though the blood has been examined four times from the tenth to the twenty-second day of the disease. The other six of the nine active cases were well advanced when the blood examination was made, and the positive result of the test simply confirmed the previous diagnosis. The dried blood of two of these cases, taken from the finger some seven weeks ago, still gives a marked reaction.

In the remaining five cases of Group I. the test was not made until convalescence was established. In three the result was positive, the interval since recovery from the fever being two months in two cases and ten months in the third. The two negative cases were examined after an interval of five months in one case and sixteen months in the other.

Group II. includes forty-eight cases of individuals either in good health at the time of the serum test or suffering from diseases other than typhoid fever, such as lobar pneumonia, malarial fever, tuberculosis, chronic nephritis, cirrhosis of the liver, puerperal sepsis, eclampsia, acute mania, melancholia, alcoholism, leprosy (three cases), scarlet fever, diphtheria, acute rheumatism, diabetes (three cases), as well as various minor ailments. The great majority of these cases failed to react at all to the serum test. In three, however—all patients in Bellevue Hospital—there was a partial reaction, never complete and unmistakable, but still as marked as is sometimes obtained in typhoid fever. The first of these doubtful cases was that of a negro named Chase, with cirrhosis of the liver and ascites. He stated that he had had no fever of any kind during his twenty years residence in New York. His blood has been examined repeatedly, sometimes with negative result, at others with a doubtful reaction. The two other patients were also of the African race, one with nephritis, the other, in a woman, with puerperal sepsis. Only one test was made in each case. Three other negroes in the hospital gave no reaction.

Thinking that perhaps negroes were more or less immune to typhoid fever, I went last week to the Colored Home and Hospital, and, with the kind assistance of the superintendent, Dr. Bickerton, I obtained blood from twelve of the patients. One only, however, of the twelve gave a moderate reaction, a patient with diabetes. I was told by Dr. Bickerton that they had not had a case of typhoid fever for fifteen years. But this may be partly due to the fact that patients with acute disease are rarely brought to the hospital, owing to the lack of an ambulance service. In my own<sup>a</sup> experience in New York I do not recall a case of typhoid fever in a negro of pure blood. I have

consulted the United States census tables, as well as the reports of the Charity Hospital in New Orleans, and have found a somewhat lower rate of mortality from typhoid fever in the colored race than among the white population.

There were thirty white persons in this group, and not one gave a positive reaction to the test, with the exception of a patient with necrosis of the tibia, who had had typhoid fever one year previously. Four of these persons were individuals who had had a fever of uncertain character a few months before the examination of the blood. The test was made in their cases in order to determine whether or not the previous illness had been typhoid fever. Had the result been positive, it might have been taken to indicate that the previous disease was typhoid in character ; but the negative result cannot be said to absolutely exclude typhoid fever, in view of the possible rapid disappearance of the agglutinating bodies in the blood, as shown by the result of some of the tests in the convalescent cases in Group I.

The greater part of the cases in the two groups just considered were those of patients in Bellevue Hospital, and they were examined during the month of November, when Widal's test was new to all of us in New York. In addition, as I have said, the clinical features of the cases were known before the blood was tested, and it is impossible, in work of this kind, not to be somewhat influenced in one's judgment of a doubtful reaction by previous knowledge of the case. I must add, however, that all of the typhoid fever cases, as well as the doubtful cases among the non-typhoid patients, were passed upon by Dr. William H. Park, and his results were the same as those given above. The only undoubted typhoid case which failed to give a marked reaction was the case of Dr. Berg's, and that case is still under observation. By good fortune I happened to preserve the dried blood of four of the other eight active fever cases, and the reaction may still be observed. I have also the original specimen from the first negro that gave a doubtful reaction, and it is interesting to note that it fails now to react at all to the test.

At this point in my investigations it occurred to me that it would be well, as a sort of control to the above observations, to apply Widal's test to the blood of persons whose clinical history was unknown to me. Dr. Frank W. Jackson, who succeeded me in the service at Bellevue Hospital on the 1st of December last, has kindly aided me in this plan, and, thanks to him and to the house staff of the first medical division, I have received from thirty to

forty specimens of blood taken from selected patients in their wards. My third group is composed of these cases, and of a few others obtained from different sources. With very few exceptions, all of the specimens were submitted to the judgment of Dr. Park, who not only is an expert bacteriologist, but has also had more experience in the serum diagnosis of typhoid fever than any one else in New York. My object was not to test my qualifications in this new line of research. My experience during the month of November had convinced me that it was not advisable for the practising physician to pursue this method of diagnosis at the bedside. I wished to ascertain whether, with the aid of a bacteriologist, the clinician could determine whether or not he was dealing with a case of typhoid fever in the absence of the usual signs of that disease.

It is not necessary to describe in detail all the observations included in our third group of cases. I may say at the outset that in the main the clinical and the bacteriological diagnosis were in agreement. In Group I. we have seen that one patient out of nine with typhoid fever failed to respond to the Widal test as late as the twenty-second day of the disease. In Group II., of forty-eight cases which were not typhoid in nature four gave a partial reaction. In Group III., in addition to several instances of doubtful reaction there are three cases in which the result of the serum test has not supported the clinical diagnosis. One case (Lang's) of well-marked typhoid fever has repeatedly failed to react to the test though it is now in the fifth week of the disease. Daily examinations of the blood have been made, and the reaction has been negative or doubtful throughout. Another case (Durphey's), which has not a single typhoid symptom, has given a marked reaction from day to day during the past two weeks, the first examination, three weeks ago, having been negative. I have brought specimens to-night of the blood of both of these patients, and I find myself in the rather novel position of showing the so-called typhoid reaction with normal blood serum, and, on the other hand, of demonstrating the failure of the reaction with the blood of a typhoid patient. An interesting feature of the first case (Lang's) has resulted from the fact that three days ago we were able to obtain some blood from the spleen, and Dr. Park has succeeded in isolating the typhoid bacillus from a culture of this blood. The case, therefore, is bacteriologically, as well as clinically, typhoid fever, in spite of the failure of the test of Widal. A third case, non-typhoid, gave a marked immediate reaction on one day, the 19th of December, but has been negative ever since. It hap-

pened that he, as well as Durphey, had been given thirty grains of quinine on that day, some hours previously to the taking of the blood. As this was the first occasion on which Durphey had reacted positively, it was thought that possibly the reaction in both cases was due to the quinine. The drug was therefore given to six patients as an experiment, but the blood was apparently unaffected in any of the cases. I must not neglect to add that both Durphey and Bucklander are negroes.

In order to test the bacteriological accuracy of the serum test when performed by competent men, I sent last week to four well-known bacteriologists of New York specimens of blood taken at the same time from three different cases. I selected for this purpose Chase, the negro with cirrhosis of the liver; Durphey, the non-typhoid case with typhoid reaction; and Lang, the typhoid case with negative or doubtful reaction. The specimens were simply numbered, with no clue to the nature of the cases. I have received three reports in reply, and the results are the same in all. Chase is returned as "negative," Durphey as "positive" or "typical typhoid," and Lang as "doubtful" or "imperfect" reaction.

I shall quote in full one of these reports as an illustration of the care and thoroughness that are exercised in this sort of work.

The tests were made with a twenty-four hours' growth of Eberth's bacilli on agar—bacilli very motile and evenly distributed through hanging drop. Results noted at intervals as recorded below:

*Specimen B. H. 31 (this is the case of Lang). Examination No. 1.*—Five minutes: Bacilli very motile, and no evidence of agglutination.

Fifteen minutes: Motility somewhat diminished, but no well-marked clumping.

Thirty minutes: Some of the bacilli motionless and formed in loose clumps with bacilli in slight motion. Free bacilli very motile.

Sixty-five minutes: Clumping more marked, but bacilli forming the clumps are not entirely motionless. Some of the clumps not stable, and when clump breaks up majority of bacilli are very motile.

Forty-eight hours: Bacilli motile where free. In portions of drop some loose clumping.

*Same Specimen. Examination No. 2.*—In this examination a smaller amount of water was added to dried drop of blood and more of serum added to diluted culture.

Five minutes: Bacilli not as motile as in control specimen;

scattered through the field, three to eight bacilli in loose clumps, and motionless. Free bacilli motile.

Fifteen minutes : Motility of all the bacilli impaired, and the loose clumps of bacilli more numerous.

Forty-five minutes : No change in reaction.

Twenty-four hours : Bacilli have very little motion.

Arrangement of clumps same as above.

*Conclusions.*—Would not consider the reaction *typical* of typhoid.

When the strong serum was used it would be classed as doubtful or "imperfect" reaction.

*Specimen B.H. 39 (this is the case of Chase). Examination No. 1.*—Conditions same as for B. H. 31, examination No. 1.—Five minutes : Very active. Motility seemingly increased ; no attempt at agglutination.

Fifteen minutes : Motility equals that of control specimen ; no attempt at agglutination.

Thirty minutes : Motility markedly impaired ; no clumps formed.

Sixty-five minutes : Some of bacilli are motionless, in others there is diminished motility. Some aggregation of bacilli, but can not be called "clumping."

(Control specimen showed no change at this time.)

*Same Specimen. Examination No. 2.*—Conditions same as B.H. 31, examination No. 2.—Five minutes : Some loss of motility, but no clumping.

Fifteen minutes : Marked loss of motility, but no clumping.

Thirty-five minutes : Motility same as above, and a few bacilli loosely collected together, but not entirely motionless.

Sixty minutes : Many of bacilli motionless, lying free in drop ; others motile in but a slight degree. Some small groups of bacilli are motionless, but can not be considered agglutinated or clumped.

Two hours : Same as above stated. Reaction negative.

*Specimen B. H. 35 (this is the case of Durphey).*—Conditions same as in B. H. 31 and 39, examination No. 1. Five minutes : Motility inhibited, bacilli collected in large clumps ; spaces between clumps free from individual bacilli.

Fifteen minutes : Same as before.

Thirty minutes : Same as before.

Sixty minutes : Same as before.

Twenty-four hours : Same as before.

Small quantities of this specimen gave marked reaction.

Would consider the reaction typical of typhoid.

This report of these three cases shows what nicety of judgment is required in arriving at a decision in a case of doubtful reaction, and it is quite possible that occasionally two observers may differ in their interpretation of the same specimen. As a rule, however, I think we may depend upon the bacteriological accuracy of the test. But what shall we say of its clinical significance, so far as we can judge from the observations that have been detailed this evening? A brief review of the cases will aid us in answering this question, and also enable us to formulate certain general conclusions. In Groups I. and III. there were, in all, twenty cases of undoubted typhoid fever in which the blood was examined during the febrile stage. In two of these cases the test failed, even as late as the third and the fifth week of the disease. In one of the two cases (Lang's) the reaction has varied from day to day, being sometimes negative and sometimes doubtful, and I think it probable that his blood will yet respond to the test.\* As an aid to diagnosis, however, the test can not be said to have proved of any value in these two cases; in fact, the negative result was absolutely misleading. On the other hand, of some eighty odd cases, non-typhoid in character, one case gave uniformly a positive result; a second case reacted positively on the first examination, but was negative on all subsequent tests. In several other cases the reaction was doubtful. In a total, therefore, of one hundred cases the results of the serum test failed to agree with the clinical diagnosis in four instances; in a number of other cases the reaction was uncertain or doubtful in character. In about ninety cases out of the hundred the reaction was decided, and its accuracy was proved by the subsequent course of the disease.

*Conclusions.*—(1) In the large majority of cases of typhoid fever the blood serum will give the so-called typhoid reaction at some time during the active period of the disease. In a small proportion of cases, perhaps ten per cent., the reaction will not be obtained, if at all, until the diagnosis has already been made from the clinical evidence.

(2) In cases apparently non-typhoid in nature, a positive reaction may occasionally occur, but probably not oftener than in one or two per cent. of the cases. This pseudo-reaction is to be attributed to the protective bodies which, as we have seen, are present to a greater or less extent in normal blood serum.

\* Two weeks after this paper was read a positive reaction was given by the blister fluid of this patient, convalescence being apparently established. The blood serum, however, still failed to react. One week later the patient had a relapse, and a reaction was obtained from both blood serum and blister fluid.

(3) In a varying proportion of cases, both typhoid and non-typhoid, a partial or doubtful reaction takes place. Repeated tests are then required in order to determine whether the reaction is due to the normal protective bodies or to the specific properties of typhoid blood.

(4) The serum test of Widal is a most valuable aid in the diagnosis of typhoid fever. With greater experience and improved technique its value will in all probability become even greater and more clearly defined. For the present, however, the test should not be relied upon alone, but should be taken together with the clinical signs of the disease.—*N. Y. Medical Journal*.

## Clinical Notes.

### VOLVULUS—OPERATION—RECOVERY. ECTOPIC GESTATION, VERY EARLY RUPTURE—COLLAPSE—OPERATION—RECOVERY.\*

BY DR. J. F. W. ROSS,

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### VOLVULUS—OPERATION—RECOVERY.

Mr. G. first had an attack of abdominal pain and obstruction of the bowels. Was attended at the time by Dr. A. R. Gordon. Dr. Gordon tells me that at this time he considered the case was one of volvulus, but the difficulty was overcome by enemas. Bowel was evidently straightened out, and the patient made a good recovery. Four or five years after this patient was working on Friday, and lifted some boxes. He felt some pain in the abdomen, and was unable after this to get any movement of the bowels. On Saturday the pain continued, and his wife endeavored to give him an enema, but the fluid returned. It was impossible to get the bowel filled with fluid. On Sunday the pain became intense, and Dr. Webster was sent for. He saw the patient at 9 p.m., and endeavored to give him an enema. After using a tube about a foot and a half long two quarts were retained in the bowel. This fluid evidently went up beyond the twist and remained there. On Monday the patient was found with the abdomen distended, the pain continuing, and distinct evidence of attempted peristaltic action of the intestine down to a certain point. Some blood and mucus were passed per anum. The patient was taken to the Western Hospital, and I saw him on Monday morning, in consultation with Drs. Webster and Carveth. At this time the abdomen was considerably distended. The patient's face looked pinched and anxious. His pulse was 90, temperature  $98\frac{1}{2}^{\circ}$ . A distinct coil of distended intestine could be seen

\* Read before the Toronto Medical Society.

lying in the abdomen with its two ends approximated in the neighborhood of the left iliac region. It was evidently very fully distended with gas. I advised immediate operation. As soon as the patient could be satisfactorily prepared operation was performed.

The abdomen was opened in the median line, and immediately a large coil of distended intestine popped out and stood up like so much erectile tissue. Its apex was about from ten to twelve inches above the surface of the abdomen. It was quite evident that this was volvulus of the omega flexure of the colon. Two half twists, or one complete twist, from right to left loosened the constriction so that a long stomach tube could be passed up into the distended bowel from the rectum. This was carried out by the nurse, and I manipulated the tip of the stomach tube so as to expel the gas from the distended gut, and thus produced flaccidity of its walls. After the intestine was collapsed the mesentery at three or four points along the mesenteric edge of the bowel on its upper and left surface was stitched to the peritoneum beneath the wound. The longitudinal muscular band on the anterior and left surface of the colon was perforated with two or three stitches at varying distances, and these were fastened to the peritoneum. The material used was fine silk. The abdominal wound was then closed with silkworm-gut sutures, and dressed in the usual way. The patient made an uninterrupted recovery.

During convalescence a large number of cherry pits, that had been lodged in the volvulus, passed away in the motions.

VERY EARLY ECTOPIC GESTATION—COLLAPSE—OPERATION—  
RECOVERY.

Mrs. S., æt. 28. One child fifteen months old. Menstruated once after birth of child, then went five weeks, that is, up to the time she was taken ill with the symptoms of the rupture. There was no uterine hæmorrhage in the interval nor at the time of the rupture. Patient doing her work as usual until between three and four o'clock in the afternoon, when she felt pain in the side. Had no idea there was anything wrong with her up to this time. A frequent desire to pass water came on. She got up to move about and fainted. She then lay down again, and endeavored two or three times to move around, but, faintness coming on, she was unable to do so. The pain then disappeared, and she felt as if there was not much the matter except that she was weak. The neighbors, however, became alarmed, and advised her to send for the doctor. This was done at 11 p.m. of the same day.

Dr. Rowan found her suffering from considerable precordial uneasiness. She looked pale ; was bathed in cold perspiration and felt extremely weak. She was pulseless at the wrist. The pain in the abdomen had disappeared. I was telephoned to at a quarter to twelve and arrived at the house at a quarter to one in the morning. I found the patient pulseless, though the heart was beating 100 in the minute. As it is frequently expressed, "the bottom had fallen out of the pulse," so that it could not be felt at the wrist. The patient looked blanched, and it only took a few seconds for me to confirm the diagnosis of the attending physician, Dr. Rowan. Urine had been passed before the onset of the symptoms, but none passed since. I have frequently noticed this suppression of the urine in these cases. The abdomen was slightly distended. By percussion intraabdominal fluid was diagnosed. The dulness was slightly moveable with change of position, as frequently happens when the abdomen is filled with blood, more or less clotted. The patient was lying in bed with her clothes on just as she had fainted in the afternoon.

I made a vaginal examination. Could feel no mass on other side of the uterus but thought I could feel blood clot break down under the finger when pressing against the downward bulging cul-de-sac of Douglas from the vaginal side. There was no time to be lost. Something must be done at once. After a hurried consultation the husband agreed that his wife should be immediately moved to the hospital. I offered the use of my cab that was standing at the door. It was decided that the doctor should go to his office and telephone to the hospital authorities that we were bringing the patient up so that time would be saved. He was then to meet us on our way up. A neighbor was roused, the little child was given to her for the night. The patient was carried out by the husband, the cabman and myself and the key turned in the door. I told the husband before leaving that his wife might possibly die on the way ; if this should occur he must not blame me, as this was the only chance to save her life.

In a short time we were at the hospital, patient was carried in and prepared for immediate operation. I telephoned to another member of the staff so that he might be dressing and sent the cab for him. It was not many minutes before he arrived at the hospital. I had everything ready so that not a moment would be lost during operation.

The anæsthetic, ether, was administered with the greatest of care. As the patient was pulseless at the wrist it was no easy matter to give it, and as little was used as possible, scarcely more than enough

to deaden the pain of the incision through the skin and to prevent straining. The patient was so collapsed that she seemed scarcely sensible of pain. With a couple of cuts the peritoneal cavity was entered, blood began to ooze out, fingers were passed down to the left tube where I thought I felt a slight roughness of the surface. They were then passed to the right tube ; nothing could be felt. I was then certain that the rupture was in the left tube. Fingers were passed down to the left tube again and this was drawn to the surface, rapidly ligated and removed, together with the ovary. Right side was not interfered with. The blood was washed out by Dr. Adam Wright, while I placed the sutures. A drainage tube was placed and the wound closed. I never made my fingers fly quicker. Only a few minutes until the operation was completed and the patient was ready for removal from the table.

The ether and the hypodermics that had been previously given seemed to stimulate the pulse. Patient was placed back in the ward and the husband advised to remain all night. Frequent saline injections were given per rectum, hypodermics of digitalis and strychnia and brandy were given every hour. The patient gradually began to mend. Convalescence was somewhat slow but very satisfactory. She left the hospital in four weeks.

The left tube has a small perforation near the uterine end. The ectopic gestation was no larger than an ordinary white bean, so that rupture in this case was very early.

# Progress of Medicine.

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## MEDICINE

IN CHARGE OF

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AND

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ASSISTED BY

**JAMES G. CAVEN, M.B.**

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### THE TREATMENT OF URÆMIA BY PHLEBOTOMY FOLLOWED BY LARGE INJECTIONS OF ARTIFICIAL SERUM.

In the *Union Médicale* for December 5 M. H. Richardière says that the good results obtained by the method called lavage of the blood in the treatment of infections have led to the general employment of large injections of saline solutions or of serum, and their application in a rather large number of diseases.

These injections have been employed with success in the treatment of a certain number of toxic diseases. In uræmia, in which they are particularly indicated, it seemed at first that they could not be prescribed, because of the lesions of the kidneys and on account of their impermeability. It has been recognized since then, says the author, that the integrity of the kidneys is not an indispensable condition to the employment of lavage of the blood. Its efficacy in the treatment of uræmia is not, however, admitted by all authors. Lépine, in particular, states that he did not obtain recovery in several cases of uræmia in which large injections were employed.

Other authors, however, have been more successful. Sahli, who was the first to conceive the idea of employing lavage of the blood in uræmia, saved by this treatment a patient who was in imminent danger of death. Bosc also recognized the good effects of subcutaneous injections of artificial serum in a case of uræmia due to parenchymatous nephritis. The patient recovered in four days.

M. Richardière recently employed these injections in two cases of uræmia, one of which was very serious, and the results obtained were sufficiently favorable, he thinks, to justify the employment of this treatment.

A fact to be remembered, he says, in order to appreciate the treatment of uræmia by these injections is their perfect harmlessness. They are, of course, somewhat painful, but if they are administered aseptically they do not cause any local inflammation. The two patients referred to, in whom M. Richardière tried the injections, had anasarca, but, although the injections were thrown into œdematous tissue, they did not cause any local symptoms.

The action of these injections is manifest on the temperature. In Bosc's patient the temperature rose a degree in an hour after the injection. In the first patient treated by the author the temperature also rose a degree during the day after the first injection; after the second injection it rose a little more than two degrees. In the second patient the rise in temperature was even more marked.

The pulse, which had been very rapid, became slower; the respiration, which had been irregular, of the Cheyne-Stokes type, became regular. The quantity of the urine passed during twenty-four hours increased notably.

Diarrhœa, says M. Richardière, should be considered a favorable symptom in uræmia. It favors the elimination of the toxic matters which are the cause of the uræmic symptoms. It then constitutes an important element in the lavage of the blood.

The conclusions are: The elevation of the temperature, the diminution of the number of the pulsations, the regularization of respiration, the increase of diuresis, and diarrhœa are the important symptoms which follow the large injections of artificial serum in uræmia.

These symptoms are all favorable in connection with an intoxication. They fully justify the employment of the method called lavage of the blood, and explain the recoveries sometimes produced in cases which appeared to be hopeless.—*New York Medical Journal*.

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#### LAPAROTOMY FOR SUPPOSED PERFORATION OF TYPHOID ULCER.

*Dr. W. P. Herringham and Mr. A. Bowlby.*—Though perforation in typhoid fever is assumed to be almost invariably fatal, cases have from time to time been recorded in which symptoms, usually held to indicate such perforation, have been followed by recovery.

Whether in these cases the bowel has actually been perforated must always remain doubtful. It has been pointed out by Fitz that there are no trustworthy signs which are pathognomonic of perforation, and that the occurrence of even a local peritonitis alone would be quite sufficient to explain the condition. That the same symptoms may occur even when there is no peritonitis at all is shown by the following case.

A girl, thirteen years of age, was admitted to the Mary ward in St. Bartholomew's Hospital, under Dr. Hensley, on January 2nd, 1896. She was healthy-looking, but had been feeling tired and had suffered from a cough since December 18th, 1895, having been in bed since the 25th. When admitted, she had some bronchitis, the heart was normal and the pulse fair, the abdomen was rather full, the spleen was not palpable, and there were a good many typhoid spots.

The temperature fell very soon after admission, and was normal on January 9th, which was probably the twenty-second day of illness. The motions were then solid, the tongue clean, and the pulse 80. The abdomen remained a little full.

On January 15th, the patient was very well. Her temperature had been subnormal for seven days; she had been allowed bread and milk for the last two days, and had been taking food well. At 5 p.m. she suddenly complained of acute abdominal pain, which caused her to cry out constantly. This gradually became worse. She vomited frequently. Her pulse was 140 and small. She was given quarter grain of morphine subcutaneously, which relieved her for rather more than an hour; but the pain then returned as severe as before. An oil enema was administered, but without effect.

The abdomen was then full and tense; its walls were rigid, and scarcely moved with respiration; the liver dullness was normal. There was marked tenderness on palpation, especially near the umbilicus, and it was to this region that the pain was referred. The temperature had remained stationary. There was a general appearance of considerable collapse.

At 8.30 p.m. we saw the case together, one of us being at the time on duty for Dr. Hensley. The symptoms had in no way improved. The child lay with the thighs drawn up, and screamed with pain on the slightest movement. The abdomen was rigid, and so extremely tender that no complete examination could be made. Retching was almost constant, though but little was now actually vomited. The pulse was still rapid, the hands and feet were cold and clammy,

As it was considered that these symptoms indicated perforation, and as the patient had previously been in good condition, it was decided to open the abdomen.

The patient was placed under the influence of chloroform, and the abdomen was opened in the middle line below the umbilicus. There was no gas or fluid in the peritoneal cavity, and an examination of the cæcum and the last two or three feet of the small intestine showed no evidence of inflammation or perforation. The whole of the colon contained scybalous masses. The abdominal wound was sutured, and a soap and water enema was administered before the patient recovered from the anæsthesia. The bowels opened freely at once. When the patient again became conscious, she complained of but little pain, and such as there was quickly yielded to small doses of opium.

We record the case partly as a singular and, as far as we can find, unique instance of simulated perforation; partly to show that a recent attack of typhoid fever need be no bar to opening the abdomen, should circumstances be such as to render operation desirable.

We have recently had under observation a similar case of acute obstipation in which the sudden attack and the symptom of collapse were such as to lead one to conclude that perforation had taken place. Large rectal enemata given by means of a long tube were followed by a gradual subsidence of all the grave symptoms.

J. E. G.

# PATHOLOGY AND BACTERIOLOGY

IN CHARGE OF

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## SYPHILITIC LESIONS OF THE HEART.

H. P. Loomis in *The American Journal of the Medical Sciences*, October, 1895, describes the pathological changes in the heart, which were undoubtedly of syphilitic origin, in cases which he has collected from a large series of autopsies that have come under his personal observation.

The most easily recognized and characteristic action of syphilis upon the heart is the development of gummatous tumour in the cardiac muscle, *almost invariably in the wall of the left ventricle*. In some cases, there is difficulty in diagnosing cardiac gummata from sarcomata, solitary tubercles, or early abscesses. Microscopical examination must be made in such cases, and sections stained for tubercle bacilli. The four cases of syphilitic gumma which have come under the author's observation were not diagnosed during life; three died directly or indirectly from the lesion, and two of them suddenly. Notes of three cases are given.

Besides gummata, syphilis gives rise to an indurated myocarditis, which in its later stages is hardly distinguishable from fibroid disease due to other causes. It is only possible to infer the origin of these new growths by the antecedent history of the individual, by the presence of constitutional syphilis, and especially gummata in other situations.

The author believes that as our knowledge of syphilitic diseases

of the heart becomes more perfect, syphilis will be recognized as an important etiological factor in the production of chronic cardiac disease, and that many patients will recover under anti-syphilitic treatment. Fifteen cases of fibroid myocarditis have come under the author's observation, and of these, three were undoubtedly of syphilitic origin. The history of one case is given. Gummata, fibroid induration, and amyloid infiltration are the only syphilitic changes observed by the author in a large series of autopsies. Endarteritis of the vessels of the myocardium, often inducing infarcts, has been noted by some observers. The following table illustrates the different forms of syphilitic disease of the heart :

#### SYPHILITIC LESIONS OF THE HEART.

- |                                                    |                                                                                                              |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| I. Gummata.                                        | 1. Recent : Soft reddish or grey masses.                                                                     |
|                                                    | 2. Old : Dry yellow cheesy nodules.                                                                          |
| II. Fibroid induration.                            | Localised : Well-defined masses, large size.                                                                 |
|                                                    | Diffused : Accompanied by inflammation of arteries.                                                          |
|                                                    | Intermediate form : Outer zone of gumma develops into fibrous tissue, cheesy centre remains as fibroid mass. |
| III. Amyloid degeneration.                         |                                                                                                              |
| IV. Endarteritis obliterans, inducing infarctions. |                                                                                                              |

From an analysis of the cases personally observed, and from a study of cases reported by other observers, the author comes to the following conclusions with regard to the symptomatology.

When symptoms of cardiac failure occur during the prime of life, for which no cause can be ascertained, such as rheumatism, valvular disease, arterial changes, or kidney disease, especially in a patient having a syphilitic history, these symptoms should always suggest syphilis as the cause of the condition.

Dyspnoea, distressing palpitation, præcordial uneasiness, syncope attacks, a feeble and rapid pulse, are features observed in most of the cases. The symptoms of the interstitial forms are such as would pertain to any disturbance in the function of the muscular tissue of the heart ; so, when a syphilitic patient has suffered for a long time from irregularity of the heart's action, severe palpitation, and interference with the systemic circulation, the possibility that this condition may be due to syphilis should never be lost sight of. A rapid improvement and the amelioration of the cardiac symptoms quickly following an anti-syphilitic treatment, are important factors in arriving at a positive diagnosis of syphilis of the heart.

Patients suffering from changes in the heart due to syphilis either die suddenly with few, if any, symptoms directly traceable to faulty

heart-action, or succumb apparently from syphilitic marasmus with all the symptoms of a slowly-increasing cardiac failure.

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#### REPLACEMENT OF DESTROYED NERVE CELLS.

Al. N. Vitzov (Bucharest), found in the brain of a monkey a new formation, occupying the back part of the skull, after incision of the occipital lobes two years previously. This mass was proved to contain nerve cells and neuroglia cells, exactly comparable in appearance to those present in normal brain tissue.

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#### EXPERIMENTAL RESEARCHES UPON THE INFLUENCE OF LAPAROTOMY IN TUBERCULOUS PERITONITIS.

Dr. N. Stchégoleff (*Archives de médecine expérimentale et d'anatomie pathologique*, September 1, 1894), from careful experiments performed upon dogs, concludes that tuberculous peritonitis is capable of being cured by laparotomy, provided the operation be made at the beginning of the trouble. If it be made late in the disease, a cure can no longer be secured, though life may often be prolonged. It is thought that the curative action of laparotomy is due to the following combination of physical causes: the traumatism that takes place to the peritoneum during the operation; thermic influence; penetration of air into the abdominal cavity, and perhaps the action of light. A combination of these phenomena causes an irritation of the peritoneum, and this reaction is followed by an inflammatory deposit, more or less intense, which is indispensable for the arrest of the morbid process.

The inflammatory reaction is characterized by an infiltration of embryonic cells, phagocytosis, and an active development of the endothelial cells. This new tissue organizes, and the specific elements of tuberculosis perish or are absorbed. That evacuation of liquid is not necessarily the cause of the cure is shown by those cases which get well after laparotomy in which no liquid was found at time of operation. The author thinks that dogs are more susceptible to tuberculosis than is usually thought.

# LARYNGOLOGY AND RHINOLOGY.

IN CHARGE OF

PRICE-BROWN, M.D.,

Laryngologist to Western Hospital; Laryngologist to Protestant Orphans' Home.

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## ANTERIOR SOFT HYPERTROPHIES OF NASAL SEPTUM

Edwin Pynchon (*Laryngoscope*) speaks forcibly of a condition not unfrequently met with, and to which he applies the above title. It consists of a compressible epithelial thickening of the septum, occurring frequently on both sides, and situated near the anterior end of the middle turbinated. It is readily diagnosed by probe or spatula pressure. This is aided by cocainisation—the small amount of shrinkage produced by it indicating the presence of the pathological condition. The color denotes slight hyperæmia. The enlargement pressing upon the turbinated often produces nasal stenosis, preventing free circulation of air through the nasal attic, and tending to accumulation of catarrhal secretions.

The treatment recommended is by making two or three galvano-cautery, parallel incisions from rear to front, through the enlargement, and at intervals of about an eighth of an inch. Care to avoid burning the turbinateds is required. About the third day the slough separates, and as healing takes place increased freedom of respiration is produced. The after treatment consists of applications of camphor-menthol in lavoline.

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## EXOPHTHALMIC GOITRE.

Tricomi (*Il Policlinico*) reports three cases of Grave's disease, in which he removed parts of both lobes of the thyroid with good results. These cases were typical. In each the goitre was very prominent—the right lobe being larger than the left; (in one the medium lobe was also developed), Palpitation, exophthalmos, pulse 120 to 130, tremor, etc., were all present. Graefe's symptom was absent. After operation these symptoms disappeared in two cases, and in the third there was noteworthy improvement. In two of the cases the dis-

ease had developed after influenza. The author would have recourse to surgical treatment with confidence, when the usual medical resources failed to produce improvement.

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DIFFERENCES OF OPINION AS REGARDS THE RELATIVE VALUE OF  
EUCAINE AND COCAINE, IN LARYNGOLOGICAL AND RHINOLO-  
GICAL OPERATIONS.

L. S. Somers (*Therapeutic Gazette*) says cocaine produces local anæsthesia in from 3 to 5 minutes, lasting from 20 to 30 minutes. On the other hand, eucaine produces local anæsthesia in from 8 to 10 minutes lasting only 20 minutes. Cocaine produces anemia of the mucus membrane while eucaine produces hyperæmia. This action of eucaine, he says, militates strongly against its use in operations upon hypertrophic tissues. The advantages, however, which it has over cocaine are the following: It produces less pharyngeal disturbance, it is less harmful to the system, it keeps better in solution, and the efficacy of the drug is not injured by boiling.

Pouchet (*Sem. Med.*) reporting to the Société Therapeutic, said that he had investigated the physiological action of eucaine. He found the toxic equivalent almost equal to that of cocaine. He says eucaine may produce toxic effects, which may even prove fatal, without any prodromic stage. Its action on the heart is as intense as that of cocaine. Eucaine must therefore be looked upon as a dangerous drug.

Reclus (*Brit. Med. Jour. Epit.*) who has studied the effects of eucaine from the clinical standpoint, says that in equal doses its anæsthetic power is less than that of cocaine. He thinks, therefore, that it should not be used in serious operations.

On the other hand, J. S. Gibb (*Philadelphia Polyclinic*) has used eucaine in diseases of nose and throat, and sums up the results of his experience as follows: (1) Eucaine is equally efficient with cocaine as an anæsthetic in ordinary examinations. (2) Eucaine possesses equal anæsthetic power with cocaine, and hence is as useful in operations on nose, pharynx, and larynx. (3) Eucaine is nearly, if not quite as effective as cocaine in reducing the engorged turbinated bodies. (4) Eucaine is superior to cocaine, in that it is less likely to produce toxic symptoms, and also unpleasant subjective symptoms, particularly as regards the pharynx.

Lastly—Jobson Horne and MacLeod Yearsley (*Brit. Med. Jour.*), after a long article upon the use of eucaine as an anæsthetic in surgery of the nose, throat, and ear, close with the following paragraph: "Several points remain for further experience to decide, but we

consider that our results, so far, justify us in continuing the investigation. Eucaine cannot, however, wholly replace cocaine, since the effect of the latter, in reducing the size of the turbinated bodies, gives it a value as an aid to diagnosis, which eucaine does not appear to possess."

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#### FOREIGN BODY REMOVED FROM THE LARYNX WITH THE AID OF AUTOSCOPE.

Max Thorner (*Jour. Lar. Jany.*), after eulogizing Kerstein's autoscope for diagnostic purposes in many cases of laryngeal disease, endorses Kerstein's statement, that it may prove of still greater value for operative procedure within the larynx—the only important change from laryngoscopic operations, being to use straight instruments instead of curved ones. In illustration he details the history of the following case :

"Mr. C. F. B., aged 24 years, consulted me March 28, 1896. While eating stewed chicken, two days before, he suddenly felt something 'go the wrong way.' He had subsequently a violent coughing and choking spell, which, after a while, subsided, to be repeated again at night. A physician, who was called, gave him an emetic, after which the patient became more comfortable. Since that time he had occasional coughing spells, although on the whole he had got on very well. However, he was sure that a foreign body, probably a bone, was somewhere lodged in his throat, although there was no difficulty in swallowing, nor any pain worth mentioning.

"The patient was a very strong young man, of more than average size. No signs of distress were noticeable. There was no dyspnoea, nor any tenderness of the neck on pressure. The voice was slightly husky. Laryngoscopic examination revealed in an extremely large larynx, situated longitudinally, a piece of bone, the broad end of which seemed to be imbedded in the right ventricle, while the other end leaned against the left ary-epiglottic ligament. The upper end seemed not to be impacted. It was evident that the patient's larynx was not very irritable. The autoscope was introduced with the medium-sized hood attached. No cocaine was deemed necessary. It was possible to readily grasp the foreign body with a slender serrated forceps in Krause's straight tube and universal handle, and to lift it out of the larynx and remove it, together with the autoscope. The removed piece of bone was one of the small ribs of a chicken, and was nearly one and a half inches long. The whole operation took but a few seconds."

## ETHMOID DISEASE.

J. Noland Mackenzie (Amer. Laryngological Association, 18th Ann. Cong.), in an exhaustive paper upon the pathological anatomy of ethmoid disease, says that :

“ The chief lessons to be learned from the foregoing study are :

“(1) That the so-called myxomatous degeneration, described by writers on ethmoid disease, is not due to mucus change at all, but is the result of simple inflammatory action.

“(2) That authors have fallen into this error, because they have approached the subject solely on its clinical side, and without the aid of the microscope.

“(3) That purulent ethmoiditis may in many cases endure for years, without producing any bone lesion whatever ; and that therefore the proposition that all ethmoidites tend toward and usually develop into necrosis has no foundation in actual pathological fact.

“(4) That the changes found represent successive steps of the same affection ; and that, therefore, divisions and subdivisions of ethmoiditis, tend to introduce an element of confusion into our pathological conceptions of the disease.

“(5) That the ethmoid region affords probably the most excellent place for the study of the origin of so-called nasal polypi.

“(6) Finally, of great importance is the striking similarity between the young granulation tissue, found in the ethmoid region, and the structure of round-cell sarcoma, and hence the possibility of error in microscopic diagnosis in early and even in more or less advanced cases.”

In a foot-note Mackenzie finds fault with the term rhinitis, as ordinarily used in descriptions of inflammation of the lining membrane of the nose. He styles the term a misnomer and its use illogical ; and the term endorhinitis as more exactly descriptive of existing conditions.

# HYGIENE AND PUBLIC HEALTH

IN CHARGE OF

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ASSISTED BY

J. W. SMUCK, M.D.

## PULMONARY TUBERCULOSIS AND THE NEW YORK BOARD OF HEALTH.

Dr. Bauer (*New York Medical Journal*) has this criticism of the recent action of the New York Board of Health in ordering every case of phthisis to be registered.

Under the heading "What good will it do?" he says about the only good will be to place circulars in the hands of the sufferers to enable them to take more care of the excretions. It will probably enable the health authorities to prepare a map of the city showing where the greatest number of cases exist. It might also furnish valuable data as regards trades or callings, relative to the disease.

Then under "What harm will it do?" he says it will cause patients who suspect themselves afflicted to delay seeking advice and the golden opportunity to cure the trouble would be lost. It will brand the patient for life. It will make physicians loath to give a diagnosis of consumption when it should be given early. It would seem that more effective work would be done by the Board if their energies were continued in the direction of educating the public and also impressing upon the members of the medical profession the importance of this question and their duty in regard to it.

In the discussion which followed the reading of the paper Dr. Park of the New York Health department defended the action of the Board on the ground that it would insure greater protection to the public, and if a small hospital were provided where the persistent offender could be taken and treated, he thought it would act as a deterrent. Dr. Delevan said that if the Board of Health were to undertake the study of the disease after the method of collective investigation, so successfully employed by them in other departments, the result would be that they would advance the knowledge of the general physician, to his own advantage and to that of his patients.

## COUNTY HEALTH OFFICERS.

The agitation coming from the Provincial Board of Health and association of executive health officers of Ontario, of recent years, for the appointment of county health officers seems to be a step in the right direction. The medical health officers as now appointed cannot give that attention which should be devoted to the duties pertaining to the office. In every city and town of this province, outside of some five or six of the larger cities, the remuneration is so small as to preclude the possibility of managing the office without attending to general practice as well.

In a paper read before the Association of Executive Health Officers of Ontario, at Belleville, Dr. P. H. Bryce, secretary of Provincial Board of Health of Ontario, made a strong plea for such county officers.

Comparison of the health work of our municipalities with that of other branches of municipal work during the last ten years, may be made, and it may fairly be asserted that progress in it is as great as in other directions; but with the exception of our cities and larger towns little exact health work is done.

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BETTER SCHOOL BUILDINGS.

Mr. A. M. Sloan, President of Greensburg Board of Health, in a paper read before the state health authorities, Illinois, on "Hygienic Demands for School Buildings," says that 200,000 persons are annually slaughtered in the United States by preventable disease. The children are compelled to climb stairs unnecessarily. Bad ventilation is found in most rooms. The light is so arranged as to make the schools absolute manufactories of shortsightedness. The boys and girls who are to become our future men and women are forced to sit by the hour in rooms where every particle of air is foul with many breaths, and the result is enervated, undeveloped bodies, in many instances too feeble to be anything save a clog to the spirits which inhabit them, thereby making them fit subjects for the ravages of the deadly germs of tuberculosis.

The writer then goes on to give some general rules for building schools, most of which are incorporated in regulations of the Ontario Department of Education.—*The Sanitarian*.

[No doubt there is a great work still to be done along the line of better school buildings in this province, although much has been done in the past ten or fifteen years.]

J.W.S.

## THE DUTIES OF THE HEALTH OFFICER IN ENGLAND.

- (1) General inspection, including drainage, etc.
- (2) Suppression of contagious diseases.
- (3) Inspection of foods, noxious trades, etc.
- (4) Inspection of schools and public buildings.
- (5) Regular supervision of the water supply.

The remuneration paid to the medical health officers of Ontario only amounts to something like \$12,000 annually, and the total cost of public health matters to the counties is in the neighborhood of \$50,000 annually.

Our educational system costs the province \$5,233,115, which includes \$89,490 as salaries to county school inspectors. Could we not well afford to pay a little more to guard the health of our children?

The medical health officers have now quite sufficient power, but that power, in many cases, does little or no good, because of professional jealousies, etc., in the rural districts.

The direct benefits to be derived from the system advocated would be :

- (1) The position would be permanent.
- (2) The devotion of the whole time of the officer to the work would relieve professional jealousies.
- (3) He would be brought in contact with all the general practitioners in his district through the laboratory.
- (4) Specimens to be examined could be sent without delay or expense.
- (5) The laboratory would be a local depot for the supply of vaccine, etc.
- (6) He would be convenient where prompt action was demanded.
- (7) He could attend systematically to vaccination in the schools.
- (8) He would gradually accumulate data which would give valuable information from a sanitary standpoint.
- (9) Accurate registration of mortality and morbidity could be obtained.

## Editorials.

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### THE BRITISH MEDICAL ASSOCIATION.

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WE publish in this issue the list of the officers appointed for the coming meeting of the British Medical Association to be held in Montreal August 31 to September 3, inclusive. We understand it is a rule in the association that those who have previously been officers shall not be eligible thereafter for such positions of honor. When we consider the list of those who have filled such offices during the last few years we can easily understand why the names of many of the leaders of the profession in the old land cannot appear on the programme for this year. However, those who know well the shining lights amongst British physicians think that the list of officers for 1897 will compare favorably with any of the best in former years.

The appointment of Osler to deliver the address on medicine will give universal satisfaction to us in Canada ; and, probably, the same may be said with regard to Great Britain. Mitchell Banks, who is to deliver the address on surgery, is said to be the most successful surgeon in the north of England, and, at the same time, a fluent and forcible speaker. Of the eleven presidents of sections two are Canadians : E. P. Lachapelle, of Montreal, "Public or State Medicine," and R. M. Bucke, of London, "Psychology." Six presidents are from London, England : Stephen Mackenzie, Christopher Heath, Watson Cheyne, Edward Nettleship, Greville Macdonald, and W. A. Waller, all of whom are fairly well known, by reputation, in Canada. W. J. Sinclair, the president of the section of obstetrics, is Professor of Gynæcology at Owens College, Manchester ; and, although not so well known to Canadians as those whose names have been mentioned, is generally recognized in England as a strong man in his department. D. J. Leech, also an Owens College professor, is well known to be one of the highest authorities upon the subject of pharmacology. Most of the vice-presidents are Canadians, and are worthy representatives of all sections of the Dominion.

## THE VICTORIAN ORDER OF NURSES IN CANADA.

IT is thought by some worthy people that Canadians should commemorate Queen Victoria's Diamond Jubilee by establishing a national fund for the purpose of placing the aid of trained nurses within the reach of all classes. At a meeting of the executive committee of the National Council of Women, held under the presidency of Her Excellency, the Countess of Aberdeen, the subject was discussed. Since that meeting a scheme has been adopted and presented for the consideration of the public. The committee in charge have asked for the small sum of one million dollars for the purpose of educating, or more probably half educating, a new band of nurses who are to supplement the work of our trained nurses by nursing at half rates, quarter rates, or at no rates at all.

The new cheap nurses are not to interfere with the trained nurses, and yet they are to be paid a "modest, moderate salary," which will lift them out of the precarious state of "waiting for a case." They are to be gentle and strong, endowed with sympathy, a delicate touch, and a charm possessing a virtue beyond that of any drug. Their qualifications are to be of the highest class. They are to work in sparsely settled and outlying country districts, villages, towns, and cities, any and everywhere, from Labrador to British Columbia. All this and many other things about these sweet creatures of the near future we learn from a little pamphlet published by the committee. The work of the committee is thus mapped out. It is to (1) draft a constitution, (2) decide how the governing body of the new order is to be chosen, (3) determine how the work to be undertaken shall be carried on.

Some there are who have doubts as to the practicability of this lofty scheme. As our hospitals are now manufacturing nurses at such a rate that the supply is more than enough to meet all demands, it is wondered when and how the new order is to be manufactured. We understand from the pamphlet that such trifling details are to be settled by a committee chosen by vice-patrons, vice-presidents and representatives of the subscribers. Certain parties who have had considerable experience think that it is not a very simple matter to train nurses in well ordered hospitals, where the candidates are required not only to receive instruction from their teachers but also to spend two or three years in laborious practical work under rigid discipline. Such people also think that the new order of nurses cannot be properly educated; and, at the same time, they believe that competent professional nurses should be encouraged and protected from

the warfare of unqualified nurses just as regular physicians and lawyers are protected from the rivalry of the irregular in both professions.

It must be understood that many of those who have their doubts about this new order have the greatest possible respect for the many noble women, whether belonging to sisterhoods or not, who are in a quiet way doing much to relieve human suffering. They also sympathize with professional nurses in the good work they are doing, and wish them the highest success. But, at the same time, they have no desire to see an influx of half educated go betweens—neither amateurs nor professionals as we understand the words—who are likely to injure nursing as a profession without accomplishing any great amount of good. If the good people who favor the new scheme could present something practical and tangible it might be more easy to form an intelligent opinion about the matter.

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#### POISONING BY ILLUMINATING GAS.

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LAST month we referred editorially to the necessity for some preventive measure to lessen the number of cases of sickness and death from the inhalation of illuminating gas. We postponed reference to some points of clinical and therapeutic interest.

The observations of practitioners in this country agree with those of certain British and American cities in connecting the increased fatality with an introduction of what is called *water-gas*. Our clinical experience with these cases of poisoning from water-gas differed from that which occurred to us with other cases in which asphyxiation had been present.

When they first began to present themselves we were often disappointed by unexpected results: patients would begin to breathe automatically, and could be partially aroused, and yet would succumb, and this sometimes after the lapse of several days. In the discussion at last year's meeting of the British Medical Association to which we referred in our previous editorial, we find the same experiences recorded. In the case reported by Dr. G. R. Davidson, of Belfast, in which death, with symptoms of pneumonia, occurred in five days, he advanced the suggestion that the cells of the respiratory tract were too much enfeebled to resist the action of the pneumococcus. Dr. Alexander Scott, of Glasgow, stated that the combination of carbon monoxide and carbon dioxide was especially deadly.

Another curious point in connection with prognosis is that the final result cannot always be measured by the profoundness of the coma when the patient is first seen. At one time a case may be met with in which there is deep coma followed by rapid recovery. At another time a case in which coma is not so profound at first, may go on to a fatal termination. The observations of the present writer had led him to the conclusion that when the term of exposure was shorter the outcome was more hopeful, even if the dose had been somewhat heavier, the longer period of exposure allowing of more permanent change in the blood. The same conclusion has been expressed by others. Difference in nervous organizations may also have a modifying influence.

In the discussion above alluded to, Dr. Haldane, of the University of Oxford, showed by experiment that a mouse could live in a jar "exposed to a mixture containing carbonic oxide exercising one atmosphere's pressure, besides oxygen exercising two atmospheres' pressure. Although it becomes somewhat short of breath, the mouse continues to live and walk about in the jar. As soon, however, as the pressure is lowered death ensues, as the amount of dissolved oxygen then becomes insufficient to support life. The venous blood (assuming that it already contains 12 volumes per cent. of oxygen) probably takes up normally about 8 volumes per cent. of oxygen in chemical combination (with hæmoglobin) and  $\frac{1}{2}$  per cent. in simple solution." . . . "We can, by increasing the pressure, so increase the amount of the oxygen taken up by the blood in simple solution as to make the animal independent altogether of its red blood corpuscles as oxygen carriers."

We have referred to these etiological details of the discussion on account of the important bearing they may have on prognosis and treatment. The fact that if the blood contain a large amount of oxygen in solution it will support the vital functions, even if the oxygen-carrying office of the corpuscles be in abeyance, and that a critical period may thus be tided over, and the further fact that a certain amount of carbon monoxide may be gradually detached from the hæmoglobin by the presence of oxygen, should lead us to give oxygen freely in these cases. Again, whilst we must recognize that there is a difference between surrounding an animal with increased atmospheric pressure and forcing air by pressure into its lungs, still we think that the observations and experiments of Haldane have some bearing upon the new or revived method of treatment of asphyxia by forced respiration, of which Dr. Fell, of Buffalo, is such an ardent advocate.

It is not our intention, in this article, to discuss other details of treatment, such as administration of strychnine, nitro-glycerine, transfusion of blood and saline solutions, application of warmth, etc. ; but we would notice, in passing, Dr. Dawson's remark that "caffeine is the (stimulating) drug *par excellence*." "Alcohol and ether are contra-indicated, as they lessen the oxidizing power of the blood."

W. O.

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## THE SUPPRESSION OF TUBERCULOUS FOOD.

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MANY of our readers have watched with great interest and satisfaction the efforts that have been made during the past few years by the Provincial Board of Health to limit the spread of tuberculosis.

Closely following the conclusive proofs of the dissemination of tuberculosis by the feeding of the flesh and milk of tuberculous animals, in the experiments conducted in various parts of the world, amongst which we may mention those of the Local Government Board of Great Britain—closely following these, there came the revelations of the diagnostic value of tuberculin. These were speedily verified in a somewhat startling manner by the observations of Mr. J. J. Mackenzie at the Agricultural College at Guelph. Here the injection of tuberculin indicated by a rise of temperature the existence of tubercular disease ; some of the animals giving this reaction were supplying milk, and tubercle bacilli were detected in it by microscopic examination, although there was no disease of the udder ; in all cases of tuberculin reaction when the animals were slaughtered *post mortem* examination gave ample verification of the existence of tubercular disease. Similar results were obtained at the Experimental Farm at Ottawa.

We were now filled with anxiety by the serious problem confronting us. If we had such unexpected and unpleasant results in the milk of animals amid good surroundings, what about our indiscriminate milk supply ? What a constant menace to the health of our children, who are so dependent upon milk as an article of food !

But the indefatigable secretary, Dr. Bryce, supported by the other members of the Provincial Board, has been wrestling with the subject, and last year the Legislature passed an act giving municipalities power to deal effectively with this problem. The Local Board of Health of Toronto has now determined to protect the children and other consumers of Toronto under this Act. In another part of this

issue we publish the new regulations, of which the main feature is that every milk producer providing milk for use in Toronto must have every cow on his premises tested by tuberculin.

And now has come the opposition of self interest and selfish interest. The milk producers have organized, and object to the expense and worry and bother of having their cows examined; and they have found out that this is a conspiracy of veterinary surgeons; and along with them have come certain other characters—the man who has been drinking milk (*et alia*) all his life and has never seen a microbe, and is not dead yet; and the politician who needs the farmers' votes, etc. But in the contest of last Saturday afternoon at the City Hall, after some solid facts ably and vigorously put by Dr. Sheard, Dr. Sisley, Mr. Preston, and others, fact and science got the best of it, and the point left to be decided appeared to be, who shall pay the piper: the Provincial Government, the city through the Local Board of Health, or the milk producers? It was pointed out that the latter had the matter in their own hands, and if at present prices they cannot afford the test, they have simply to add a fraction of a cent to the price per gallon to recoup themselves.

We hope that those who are fighting the battle for us and our children against the ravages of tuberculosis will have the warm individual as well as collective interest and support of our profession.

Between the time of writing the above and going to press we have been informed that the Legislature has suspended the action of the clause enforcing the tuberculin test for one year. We regret that even a year will elapse before this desirable measure is enforced, but we trust that at the end of that time all parties will be fully prepared to take action.

W. O.

## Correspondence.

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### DOCTOR OF REFRACTION.

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To the Editor of THE CANADIAN PRACTITIONER.

SIR,—The public thinks that by going to a “doctor of refraction” it is thus employing a regularly authorized and well educated man, who is, what he says he is, skilled and well versed in the giving of glasses. Also as an additional incentive is the phrase “examination free of charge.”

The “doctor of refraction” takes good care fully to recompense himself for his time and the value of the glasses given by the price that is charged. This “bargain” idea which influences the public, is misplaced confidence. As to the professional standing of the “doctor of refraction,” it has a wrong idea. At this I am not so much astonished. The “doctor of refraction” is allowed to assert himself as everything he claims to be without the medical council taking any steps to show the public that he has a worthless degree. Again, it is still less to be blamed, when it will, in support of the “doctor of refraction” say, but Dr. So and So, my family physician, said to go to such and such a jeweller and get the “doctor of refraction” or equally misapplied name, “optician,” to test your eyes for glasses. Here the family physician is assuming a grave responsibility, and grievously injuring the medical profession; for he is deliberately recommending a patient to consult an unqualified man. He may say, as some do, it is only for glasses. He ought to know that correctly to prescribe glasses requires all the skill and care of an oculist, and that the symptoms of the necessity of glasses may be due to another condition of the eyes altogether, that is disease of them. This I have had personal knowledge of on a good many occasions. I hold that the physician who so acts is betraying his trust both in relation to the public and his brother physicians. Moreover, when the public sees this tolerance and support of quacks by the profession, it is apt to say, those quacks must be pretty skilful

after all as the regular physician recognizes them by sending patients.

I have another query to put to the medical council. Why does it allow to remain unwarned and unprosecuted the regular physician or physicians, who act irregularly in a most open way? The mind of the whole profession is ethically so poorly educated that even it, I may say, very often seems to be actuated in its procedures regarding non-ethical conduct more by prejudice than, as it ought to be, by principle.

I think it is time that the medical profession took thought of the complaint herein made and by the non-support in every way of the "doctor of refraction," make evident to the public their opinion of him, and thus at the same time remain true to the trust reposed in them by the public, and that demanded by and promised to the medical profession at large.

Truly yours,

G. H. B.

# Meetings of Medical Societies.

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## TORONTO MEDICAL SOCIETY.

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THE regular meeting was held on the 1st of April, Dr. W. J. Wilson presiding.

The secretary read the minutes of the second last meeting, which were adopted. The minutes of the last meeting were taken as read.

Dr. Chambers presented a young man with acute glossitis. The patient had an affection of the tongue twelve years ago, which started in the papillæ. The tongue became black on the surface, as it is now in two or three places, probably due to ecchymoses. The hypertrophied papillæ extend to the base of the tongue on one side, and only half way on the other.

Dr. Wilson asked if the patient had ever had typhoid. He had seen typhoid produce a bad tongue. Dr. Chambers said that there was no history of typhoid.

Dr. Starr presented a boy aged ten, with a non-developed arm. At the age of five months it was noticed that he did not use the right hand. There was no history of difficult labor, nor of an acute illness. The arm is about the same length as the other, but the most of the muscles, especially those about the shoulder, are affected, being markedly atrophied. The latissimus dorsi, both pectorals, and the supinators, are markedly affected. The clavicle and the scapula are very small. The humerus is very fragile, and has been broken several times.

Dr. Hunter said that he had had a somewhat similar case. All the limbs were affected. They were all paralyzed at birth; the lower ones worse than the upper ones. At four the child had diphtheria. Since then there had been a steady improvement.

Dr. McPhedran, referring to the case of glossitis, said the bacteriology of the case should be gone into. He thought there was a constitutional as well as a local cause to account for the trouble.

Dr. Chambers said he thought it was a case of ichthyosis.

Dr. Graham said he was not prepared to say what Dr. Starr's case was. The attack coming on in July was suggestive.

Dr. B. E. MacKenzie said he had a patient whose leg presented a similar condition to the arm of the boy presented. He had applied an orthopædic apparatus, which served as an artificial limb. He was in doubt as to whether it was caused primarily by infantile paralysis or not.

Dr. Peters said it seemed to him that the lesion showed an affection of the anterior roots of the spine. The intrinsic muscles of the hand, which were supplied by the ulnar nerve which came from the first dorsal, were fairly well developed. The extensors and flexors of the wrist were developed, and also the extensors and flexors of the fingers. But the muscles supplied by the fifth, sixth, and seventh were atrophied. Then there was no sensory disturbance. So that the lesion corresponded to a segment of the spine, rather than to certain nerves.

Dr. McPhedran pointed out that the neck on one side was more developed than on the other. The sterno mastoid on the affected side was well developed, while the trapezius was not. The latissimus dorsi was practically absent. So that the lesion was wider than Dr. Peters thought.

Dr. Hunter presented a boy who had been operated on for contracted foot by Dr. MacKenzie. Dr. MacKenzie discussed the pathology of the case, and described the operation. The result was a good one.

Dr. Hunter presented a man with Dupuytren's contraction of the hands, and a similar condition in one of the feet. He had cut the fascia on one of the hands about a week since, and straightened the fingers. The case was progressing favorably. He related the history of two other cases he had treated.

Dr. Carveth said Dupuytren had made a study of this condition, which had taken his name about seventy years ago. He attributed as causes of the condition gout, and injury to the nerve endings. His treatment consisted in restoring the fingers to the correct position, dividing across the contracted fascia, and applying splints for a number of weeks. He advised amputation when the disease had run a long time. In the later stages of the disease the muscles and tendons become contracted. The treatment recommended now-a-days was to make an incision over the contracted part, and dissect out the fascia, and treat the wound in the ordinary way.

In reply to a question, Dr. Carveth said that the condition was brought about by a slow form of inflammation due to irritation of

the nerve endings. In most cases there was a history of injury. In answer to a question as to how the condition was accounted for when it occurred in the new born, he said that Abbe held that such were not true cases of Dupuytren's contraction.

Dr. J. E. Forfar read a paper on

#### HYSTERO-EPILEPSY.

The diagnosis and treatment of this disease were difficult. It might appear in the guise of many other ailments of spine, heart, lungs, or uterus. Such cases should receive the most careful attention. In this disease ideas control the body and produce morbid changes attended with epileptiform seizures. The patient shows mental irritability, altered moral disposition, lessened inhibitory force, impairment of volition, illusions, etc. Charcot claimed that scleroses of the lateral columns of the cord were found in post-mortem examination of long standing cases. The disease was most common in females between the ages of fifteen and thirty-five. Mal-digestion, worry, anxiety, grief, bad hygienic surroundings, fright were reckoned among some of the causes. Heredity was an important predisposing cause. Anæsthesias, parasthesias, paralysees, contractions, hallucinations, headache, the globus hystericus, cardialgia, singultus, etc., were some of the symptoms complained of. The essayist pointed out the difference between this condition and epilepsy proper, giving a tabulated list of the symptoms of each. A complete description of the various phases of the convulsion was then given. Treatment should be directed toward removing the causes. During the attack assafœtida and yolk of egg may be administered per rectum if the mouth cannot be opened. The mouth may be filled with salt; the head drenched with cold water. Electricity may be used for the paralysis. The patient should not be treated as a malingerer. Friends should be kept away. Any uterine derangement should be treated. Patient may be kept on milk. Hypnotism might be employed. Change of scene was to be recommended. No alcohol should be allowed.

Drs. Graham and Cameron discussed the paper.

Dr. Hunter reported a case occurring in a man, which dated from an injury.

Dr. McPhedran presented a cylindrical epithelioma of the stomach. The patient gave a history of debility and anæmia, loss of appetite, pain and distress in the stomach for the past fifteen months. The patient was not greatly emaciated. There was distention of the stomach. The contents showed the presence of

hydrochloric acid. A few days before death the temperature ran up moderately high. Post-mortem showed the mass to be situated in the greater curvature. There were several smaller masses. The doctor reported a second case in which the carcinoma was situated in the pyloric end of the stomach. A gastroenterostomy was done, and the patient was improving.

Dr. H. H. Oldright showed a dermoid cyst, which, with the assistance of Dr. Wm. Oldright, had been removed the day before from a woman. The patient gave a history of miscarriage followed by frequent and painful micturition. Examination showed the mass to be in the pelvis behind the uterus. The cyst was opened before the society, and was found to contain fat, hair, and teeth.

The society then adjourned.

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### THE TORONTO CLINICAL SOCIETY.

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The regular meeting of the society was held in St. George's Hall, on the tenth of March.

President Dr. Allen Baines occupied the chair.

Fellows present: Doctors Strange, W. H. B. Aikins, W. Britton, J. A. Temple, J. E. Graham, B. Spencer, Trow, A. A. MacDonald, A. H. Wright, Fenton, Anderson, Johnson, Prinrose, Peters, Oldright, J. O. Orr, Cameron, Davison, O'Reilly, Bingham, Boyd, Fotheringham, McDonagh, Baines, and Brown.

The minutes of the last meeting were read and adopted.

Dr. H. J. Hamilton was nominated as a Fellow, moved by Dr. Trow, seconded by Dr. Brown.

Dr. A. Prinrose presented a patient who had accidentally shot himself eight weeks ago with a revolver of thirty-two calibre, the bullet entering the chest one inch from the middle line over the sixth cartilage. His physician put him under chloroform and probed for the bullet, but was unable to find it. He thought it was lodged in the liver. With the "X" rays the bullet could be seen between the shadow of the heart and that of the liver when the patient took a deep inspiration. By getting the tip of the finger, the bullet, and the sharp end of a pair of shears in a line while the shadow-graph was taken from the antero-posterior direction, and resorting to the same device while the shadow was taken from side to side, it was discovered that the bullet was about three-quarters of an inch to the right of the point of entrance, and about five-eighths of an inch from the surface. The shadow of the liver, and also of the heart with its pulsations, could be distinctly seen.

Dr. J. E. Graham said that he had seen it reported that in a similar examination with the rays it had been noted that the heart moved up and down with the respiratory movement. It had also been stated that if the patient were exposed too long to the rays the circulation would be affected.

Dr. Primrose said that with the liver moving up and down during respiration the heart must surely do so too.

Dr. Grassett said that he had seen a similar case to the one reported and had referred the patient to Dr. Walker, who took a skiagraph, but no bullet was made out. The patient suffered from no symptoms.

Dr. Primrose suggested that the bullet might have been in the shadow of the liver.

Dr. Oldright asked if the lungs made a shadow.

Dr. Primrose replied that one could see through the lungs perfectly. He thought it would be difficult to get a shadowgraph in the case presented, because the bullet could not be made out during expiration.

Dr. J. E. Graham read a paper on

#### POISONING BY ILLUMINATING GAS.

He gave the history of two cases. They were of two sisters who had retired at 11 p.m., and were found the next morning at 8.30 in an unconscious condition.

The patients were removed to a pure atmosphere and artificial respiration commenced, strychnia given hypodermically, and brandy per rectum.

The pulse of the elder was weak, a strong odor of gas came from the lungs, and the breathing was stertorous at times. There were erythematous patches on the face. The urine and the faeces were discharged involuntarily. A severe pain would cause the limbs to move. The temperature before death rose to 105, the respiration to 80, the pulse to 150. The disintegration of the corpuscles may have accounted for the high temperature.

In the second patient the condition appeared to be much the same, but she suffered from nausea and vomited freely. A pinch would produce tonic spasms of the arms. The pupils were contracted. The patient lay unconscious for seventy-nine hours. The urine was drawn off by catheter for four days, then micturition, as well as defecation, was involuntary, but afterward, both were normally performed. The highest temperature was 103. As the patient grew stronger she became irritable and nervous, and asked foolish ques-

tions. There was a certain amount of aphasia. A saline solution was given per rectum, which increased the elimination from the kidneys. Patient grew worse if this part of the treatment were omitted. Nitro-glycerine was administered the first week. The brandy which was also given caused stertor. The skin was sponged with salt water.

The doctor said that illuminating gas was much more poisonous than formerly. The proportion of carbon monoxide formerly was five to ten per cent., now it formed about from twenty to thirty per cent., according to analysis made in Boston recently.

The effects of carbon monoxide on the blood were still under discussion. It formed a compound with the hæmoglobin in the blood corpuscles displacing, the oxygen, so that the corpuscles could no longer perform their functions as oxygen carriers.

If a patient were exposed for a long time to a small amount of gas the symptoms were worse than in those cases where the exposure had been shorter to a large amount. The symptoms in cases of slow poisoning were then described.

Secondary conditions produced were bronchitis, hæmoptysis, headache, paralysis, hyperæsthesia, anæsthesia, herpes, pemphigus, gangrene, etc.

One authority had pointed out that there was increased permeability of the capillaries; this might explain the occurrence of some of the nervous phenomena.

Dr. Graham said that reports of post mortems are not as exhaustive as one might wish. He detailed those signs usually found.

After discussing the prognosis the doctor described the management of such cases fully.

A review of such cases brought up an important question in medical jurisprudence. It was doubtful if corporations had a right, for purposes of economy, to supply to dwellings such a poisonous gas as water gas is known to be.

Statistics had shown that the number of deaths by suicide and accident had increased three or four fold since the introduction of water gas as an illuminant.

Dr. Oldright said that this was a question in which the Fellows were each personally interested. He called attention to the large number of cases of death from gas poisoning. The less virulent character of coal gas than water gas had been shown by experiment with animals. He suggested that the inspectors of gas-meters might inspect gas fixtures as well. This would save many accidents. The

habit of shutting the gas off at the main for purposes of economy or safety was fraught with danger, because next morning when turned on again it might escape from a tap which had been left open the night before. Certain preventive measures were referred to by the speaker, such as, the use of automatic burners, the opening of the fan-light, etc. After referring to the pathological condition of the blood, the speaker said that the most fatal form of gas poisoning arose from a combination of carbon monoxide and carbon dioxide according to Scott of Glasgow. The same authority reported cases of insanity and imbecility as sequelæ to gas poisoning. The speaker described an experiment for ascertaining the percentage of carbon monoxide in the blood. It was held by some that the administration of oxygen under pressure tended to the separation of the hæmoglobin and the monoxide. Alcohol was not beneficial in these cases according to some authorities; but was positively injurious. Transfusion of blood was said to be of more service than saline solutions; the latter did not improve the quality of the corpuscles. He had noted in cases that recovery followed in cases where patients were exposed to a large amount of gas for a short time more readily than where they had been exposed to a small amount for a long time.

Dr. Cassidy said that he had found upon inquiry that the gas used in the city of Toronto contained only about 12 per cent. of carbon monoxide.

Dr. J. L. Davison asked if it was not better to use defibrinated blood than the salt solution with the hope of replacing the disintegrated corpuscles, to lead to the carrying on of normal oxidation in a more normal manner.

Dr. A. J. Johnson described the post mortem changes found in these cases. The main features were the same as those in other cases of asphyxia. The color of the ecchymotic patches in these cases was somewhat distinctive. A patient might be poisoned in a room while the gas was still burning in one jet, though escaping from another, showing that it would kill although not large enough in amount to be inflammable. Dr. Johnson gave the history of some cases.

Dr. Cassidy stated that air charged with from  $\frac{1}{2}$  to 1 per cent. of the monoxide was fatal. In one case recorded it was estimated that the percentage was only .44.

Dr. Primrose said he thought that the saline injections were more efficacious than the blood, because the disorganized corpuscles would not be able to utilize the blood injected.

Dr. Cameron pointed out that the normal salt solution had no power of carrying oxygen, although it might maintain the tension of the circulation until the nutritive processes came into action so that sufficient pabulum was formed in the system from which the hæmoglobin could be obtained. To carry oxygen hæmoglobin was necessary, and he was of the opinion that the injected blood would supply the hæmoglobin to take up the oxygen given. A rational procedure would be, inasmuch as the monoxide formed such a stable compound with the hæmoglobin, to deplete the venous system and introduce new blood from without. He, however, had never seen any such experiment in the human animal.

Dr. Peters said it seemed to him desirable in such cases to get the oxygen into the blood in some way, either by forcing in air or oxygen. In order that the patient be alive it was necessary that there be some hæmoglobin in the system. There was no doubt that if the patient recover the carbon monoxide must disappear. It was not definitely known how the hæmoglobin formed in the system. It was probable that the injections of salines by washing out the tissues induced protoplasmic changes which were followed by the formation of corpuscles containing hæmoglobin. Oxygen forced into the system was a most important procedure.

Dr. Spencer asked if the effects of the carbon monoxide were less injurious to younger than to older persons. It seemed to be so in the cases reported. He had been called in attendance on a man, wife and baby who had been poisoned. The father and mother were both insensible, but by hard work were saved. The child was little effected and was playing about in the morning. His conclusion was that the metabolism was much more rapid in the child and the hæmoglobin formed more quickly, and so the child was more able to withstand the action of the gas.

Dr. Anderson said that the younger woman of the two cases reported was the weaker, according to the history. Probably she suffered less because she respired less deeply.

Dr. Graham said that he preferred oxygen to ordinary air in the treatment by forced inspiration. It had proved immediately beneficial in the two cases. Improvement was immediately noted on the pulse. In this way the hemoglobin which has been injured by the carbon monoxide is more thoroughly oxygenated, the nerve centres are better nourished and secretion and elimination take place in a more direct manner. By bleeding the patient much more poison is gotten rid of than in my other way. He did not think that the transfusion of blood was of any special advantage, because in ordin-

ary conditions the blood corpuscles of the transfused blood became disintegrated.

Dr. Charles O'Reilly read a paper on

#### ARTIFICIAL RESPIRATION.

He also presented the Fell apparatus for doing forced respiration, and also one of his own devising. He said failure of breathing of a non-obstructive character arose from various causes, such as an over-dose of anesthetic, affections of the lungs, and bronchial tubes, syncope from anæmia or heart failure, an over dose of morphine, chloral, gas, and suffocation from drowning. Dr. O'Reilly reviewed the methods proposed by Sylvester, Howard, Hall and others. In certain cases where there was rigidity of the muscles of the chest or of its walls forced respiration was probably the best procedure to adopt. This procedure had been recommended at various times by such men as John Hunter, Simpson, Richardson and others, but of late, Fell, of Buffalo, had been its chief exponent. His apparatus as offered to the profession was too expensive. It, however, could be readily improvised by the physician. The doctor then showed one he had made. He said he had not yet had the opportunity of using it. The apparatus consists of a pair of hand-bellows, a long rubber tube in which a valve is placed which is opened when expiration takes place. To the oral end of the tube is attached a mouth-piece, which fits tightly over the face. In cases where it was necessary to do tracheotomy a special tube was used for insertion into the trachea.

Dr. O'Reilly's own device was a most ingenious one. It consisted of a garden hose tube. One end was attached to the perforated top of a tin pail which contained lime water through which the inspired air was drawn. One coil was then made in a pail of warm water to warm the air as it passed through the tube, then proceeded to the bellows and from the bellows a tube led to the mouth-piece.

Dr. Oldright presented a jar he used for the administration of oxygen; which was of use when a bag was not available.

On motion of Dr. Primrose, seconded by Dr. Wright the nomination of officers was deferred until the next meeting.

A paper to be presented by Drs. J. A. Temple and F. Fenton was laid over until the next meeting.

The society then adjourned.

## TORONTO PATHOLOGICAL SOCIETY.

REGULAR meeting held in the Biological Building February 27, at 8.30 p.m., the vice-president, H. B. Anderson, in the chair. Members present, Anderson, Greig, Carveth, Graham, McPhedran, W. Oldright, Fotheringham, Primrose, Starr, Cameron, Reeve, J. J. McKenzie. Visitor, Dr. Goldie.

Dr. J. E. Graham presented,

## (A) CARCINOMA OF THE STOMACH.

Discussed by Dr. McPhedran.

## (B) MITRAL STENOSIS.

CASE. Young man, *æt.* 23. History of gonorrhœa in October last, and history of heart trouble caused by running a mile race about a year ago without previous training.

History of paralysis (right hemiplegia) fair recovery.

Heart became very irregular during an attack of tonsilitis in January, during his stay in the hospital, but he recovered. He died from a similar attack February 18.

Dr. Graham also showed a sphygmographic tracing of a heart with a double aortic lesion, showing marked anacrotism which had been pronounced by the finger a dicrotic pulse. The explanation given was that the aortic orifice being always open, at the beginning of the systole a contraction of the aorta causes the first rise and the large ventricle, with its heavy blow to the blood column, causes the second wave in the tracing.

Discussed by Drs. McPhedran and Primrose. Diffuse cancer of the liver (slides) resembling closely hypertrophic cirrhosis of the liver in gross characters.

Dr. J. T. Fotheringham presented lung from a case of fibroid phthisis. Discussed by J. E. Graham, I. H. Cameron, and A. McPhedran.

## LUNG FROM CASE OF FIBROID PHTHISIS.

CASE. Patient C., *æt.* about 40, had suffered from tubercular glandular abscess of left axilla some twelve years before, cure of which was apparently complete. Four years ago he began to cough, and had on admission all the signs of chronic pulmonary tuberculosis. The left lung was evidently the later affected, and the process in it was one of tuberculous broncho-pneumonia. The base of the right lung was retracted so that the liver was bare to the fourth interspace in front, and the pulsations of the heart plainly seen in three

interspaces to the right of the sternum. The base behind was about three inches higher than that of the left lung. Attention of members is drawn (1) to the great size of the two communicating cavities of the apex.

(2) To the very marked local thickening of the pleura at the apex.

(3) To the localized fibrosis about the cavities, just such as is seen about all such cavities, though here rather more than usually extensive, so that between fibrosis and cavity formation the entire upper half of the lung is quite without any value in respiration.

(4) To the combination of fibrosis and broncho pneumonia seen in the lower half of the lung, and the remarkable difference in gross appearance between the upper and lower halves.

(5) To the perforation of the large branch of the pulmonary artery in one of the cavities, well found at time of post-mortem examination by inflating air at the cut end of the artery in the root.

(6) To the absence of bronchiectasis death was due to a sudden and very severe hæmorrhage, about 5 a.m., while lying quietly in bed, a mode of death which Jurgensen says is rather rare. He had had some small hæmorrhages before, at long intervals, which again Jurgensen says is commoner in cirrhosis than in ordinary tuberculosis of the lung. A distinction not of much value in our present knowledge of the disease.

The examination of the lung satisfies me I think that I had overestimated in my clinical examination the amount of disseminated fibrosis as shown by the baring and displacement of other viscera, and that I had underestimated the amount of mere mechanical up-lifting of the lung from the dome of the diaphragm by the steadily contracting adhesions and cavities at the apex.

In Ziemsen's Cyclopædia of Medicine Jurgensen gives modes of death, as follows, in order of frequency :

(1) Cardiac—with dropsy and dyspncea.

(2) Septic absorption from putrid secretions in large bronchiectatic or phthisical cavities.

(3) Exhaustion, as in ordinary pulmonary tuberculosis.

(4) Hæmorrhage.

(5) Pnuemo-thorax.

(6) Metastatic brain abscess. } rare.

Present view as to pathology and etiology of this disease is, broadly :

I. That some cases may begin as a tuberculous process ; slow,

fibroid, well resisted, especially a pleuritic deposit first, invading lung from outside.

II. That others are secondarily tubercular but primarily simple—(whatever that may mean)—following on

(a) Chronic bronchitis.

(b) Broncho pneumonia, as seen especially in whooping cough, measles, typhoid. Jurgensen, in Ziemsen's Cyclopædia, gives these diseases as causes.

(c) Pleurisy, especially with effusion and long compression more certain to produce cirrhosis if purulent, providing patient lives.

(d) "Dust lungs."

(e) Syphilis—Virchow says usually a broncho-pneumonia or a chronic multiple pleuro-pneumonia. (Jurgensen *loc. cit.*) Some of these may at least conceivably remain uninfected with tubercle to end.

Delafield and Budden make the rather sweeping statement that "only one lung is small and the other lung is large and emphysematous." German authorities show that bronchiectasis occurs rather more frequently in one lung than in both, and that if in both one is more seriously affected than the other.

Jurgensen (*loc. cit.*) gives a very interesting historical sketch of the study of the disease, and his own views are now interesting mainly from a historical point of view, as the real nature of tuberculosis was then unknown to him.

He indicates that for long enough the fight raged round the question of whether this disease began in the tubes and after bronchiectases had formed, proceeded to invade the tissues, or *vice versa*. The necessity of bronchiectases as part of the disease was then conceded apparently by all.

In 1808 Lænnec described bronchiectasis fully, and for the first time, and thought it purely mechanical from pressure of retained secretion.

Andral followed his countryman Lænnec, and added the idea that disturbed nutrition in bronchial wall was an important element in the case.

Raynaud, 1835, added the idea that respiration had to do with the formation of the sacculations, giving inspiratory effect the chief credit or blame.

Then the English physicians began investigations, and to them Jurgensen gives generous credit—Stokes, Williams, and Corrigan.

Stokes "first advanced the idea, so fertile of suggestions, that under certain circumstances bronchi and arteries are legitimately comparable."

Then Williams clearly insisted on the impairment of the quality, mainly of elastic elements in bronchi, due to chronic inflammation, which allowed respiratory effort, especially that due to cough, to act in producing dilatation. Williams thus opposed Raynaud's inspiratory theory directly.

Corrigan then came, marking the division between the ancient and modern in the nosology of this disease, for he drew a parallel between cirrhosis of the liver and this disease, and thought that the process began in what he called the "fibro-cellular" tissue lying between the bronchi. He seems to have expressly stated that the bronchiectasis was not due to a bulging force from within the tube alone, but to a dilating force from within, due to the pull of the contracting pulmonary tissue. The idea that bronchiectasis is an essential part of the disease died out only when the distinction was clearly drawn between tubercular vomicae and dilated bronchi, since 1860.

In this particular lung, bronchiectasis is not a marked feature, so that these old observers would probably have called this an instance not of chronic interstitial pneumonia, but of fibroid phthisis, a distinction which I think we would do well to draw, though the terms are now convertible. In other words, we should, I think, look on this as a primary tubercular cirrhosis, not as an interstitial pneumonia with secondary tubercular infection.

After Corrigan's work, the Germans had their innings, Hasse and Rokitansky being prominent in the investigation, not so much of the lung condition as of the sequelæ or complications, such as heart-changes, dropsy, hæmorrhages, etc. Jurgensen credits the term "interstitial pneumonia" to Rokitansky.

About 1860-4 Biermer, in Virchow's collected works treated of the whole subject very extensively and thoroughly, and in 1862 Traube and Zenker did much to clear up the question of "dust lungs" and the changes consequent on the introduction of such foreign matter to the lungs.

My apology for dipping into history thus is that it is desirable that we should occasionally "take stock," as it were, to see how very recent, in the case of almost all diseases, is the more correct view which we are taught and which we are apt to take for granted to have been the view of an indefinite number of generations before us. The pathology of the disease, according to our present views, of course I need not discuss before the gentlemen here.

(3) Organs from a case of drowning were shown by A. Primrose, with microscope slides of (*a*) liver, kidney, spleen and lung showing

extensive hæmorrhages. (*b*) A. Primrose—neuroma which should be a fibroma because of the amount of fibrous tissue, from an amputation stump. Discussed by J. E. Graham and I. H. Cameron.

(4) H. B. Anderson presented a malignant papillomatous cystic adenoma of the ovary with secondary deposits in the stomach and liver.

CASE. Mrs. —, æt. about 65. Body extremely emaciated. Abdomen very prominent. The peritoneal cavity contained a very large quantity of straw-colored serous exudation. Throughout the peritoneal cavity were many papillomatous masses—varying in size from about one inch by one-half inch in diameter—two masses the size of a pea. These masses had divided cauliflower-like extremities. They were found in large numbers in the omentum on the surface of the stomach and under surface of the diaphragm on both sides. They were all fairly firm in consistence and were free in the peritoneal cavity. The omental and mesenteric fat was of a remarkably deep yellowish or almost ochre color.

In the pelvic cavity a large tumor was found lying in front of the uterus and upper part of the vagina and behind the bladder, to which structures it was quite adherent. The tumor was soft in consistence, and on section was partly broken down internally. On its surface were numerous cysts, some of them containing clear fluid, others being almost solid from growths into their interior, the outline alone remaining.

The left ovary and tube were in proper position and the tumor was adherent to them anteriorly. The right tube contained some firm corpora amylacea. The right tube, with the atrophied remains of the fimbriated end, are present but there is no trace of the right ovary, the tumor evidently growing from and so completely replacing that organ.

Both pleural cavities contained a considerable quantity of clear serous fluid and attached to the pleura (parietal) on both sides were large numbers of papillomatous growths, quite similar to those found in the peritoneal cavity. There were no nodules in the lungs.

The stomach presented on its anterior surface a large irregularly ulcerated surface apparently cancerous.

In the liver were found several nodules soft in consistence.

The microscopic examination of the ovarian tumor and of the papillomatous nodules shows them to be of malignant papillomatous formation consisting of a central stalk of connective tissue containing vessels, etc., with irregularly shaped and sized epithelial cells arranged in several layers upon this central stem. The central

stalk branched as it grew and each branch was similarly covered with stratified epithelium.

The stomach and liver were not examined microscopically, but I think the condition in the stomach was a primary cancer co-existing with that in the ovary and producing the secondary nodules in the liver.

The trouble in the ovary evidently began as a papillomatous cyst. This subsequently took on malignant (cancerous) change with rupture of some of the cysts and implantation in the peritoneal cavity. The pleural cavities were infected secondarily through the lymphatics passing through the central tendon of the diaphragm from the abdominal cavity.

*Discussion.*—I. H. Cameron thought death probably resulted from terminal infection or mechanical obstruction. He thought the yellow staining of fat was probably the result of red blood cell disintegration as is found in malignant cases. Stomach is often infected secondarily from the uterus.

The direct infection of the pleural cavity from the peritoneal, though possible, is very rare.

J. E. Graham suggested that the cancer of the stomach might be primary.

Meeting adjourned.

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Regular meeting held in the Biological Building, March 27, 8.30 p.m. President J. Caven in the chair.

Report of council, presented by F. N. G. Starr. Drs. Pepler, Rudolf, and Fenton, decide to leave their work for initiation till next year.

Members present, J. Caven, J. E. Graham, Starr, Hamilton, Oldright, H., Oldright, W., Carveth, Greig, Wilson, W. J., Fotheringham, McPhedran, Anderson, Amyot, Peters, Cameron, Reeve, Rudolf.

Visitors, W. Goldie, Parsons and D. K. Smith.

Dr. Graham presented specimens from a case of

ULCERATIVE APPENDICITIS WITH ABSCESS FORMATION AND HÆMORRHAGE INTO THE CAVITY OF THE ABSCESS.

History as follows :

Chinaman, aet. forty years. Patient came into the hospital on Friday evening in a moribund condition. The pulse frequent and almost imperceptible.

The patient stated that the pain commenced in the right inguinal region, followed by swelling. Owing to want of knowledge of English a history could not be made out.

The abdomen was very much swollen from the presence of gas in the intestinal tract, as well as fluid in the peritoneal cavity. The patient gradually sank and died in a few hours after he was admitted into the hospital.

Post-mortem, eight hours after death. On opening the peritoneal cavity a large quantity of bloody fluid gushed out. The omentum, bowels and mesentery were found adherent in a mass of inflammatory adhesion. No sign of tuberculosis. Three or four small abscesses were found in the mass as the intestines were removed. A cavity made up of lymph, easily broken down, was found in the lower part of the abdomen about the centre, above and behind the pubes. It was filled with clotted blood.

On removing the cæcum the appendix was found attached to the wall of the cavity just mentioned. The end of the cæcum was quite patulous and a probe the size of a lead pencil was easily passed through into the intestine. The extremity had sloughed off. The abdominal aorta was examined, and patches of atheroma were found extending throughout. No aneurismal dilatation either in the aorta or its branches. The case appears to have been one of ulcerative appendicitis with abscess formation in which a hæmorrhage had taken place into the abscess cavity. The opening into the vessel was not found.

A. McPhedran presented

#### A CARCINOMA OF THE STOMACH.

Patient æt. 50. Mechanic. HCl. usually present, sometimes absent. A large mass invaded the cardiac end and also several smaller ones. The pyloric end was fairly healthy, thus explaining the condition of the gastric fluids.

Discussed by J. Caven and J. E. Graham, W. Oldright presented a myxo-sarcoma from Scarpa's triangle with notes of case, and sections. Also a fibrinous mass from a bone cavity.

H. B. Anderson presented a

#### MALIGNANT STRICTURE OF THE ŒSOPHAGUS.

Patient æt. 60. The lumen was very small, only one-quarter inch in diameter. The ulcerated surface surrounds the œsophagus above, but invades the lower part only on the anterior surface.

It is a squamous epithelioma in character. Glands enlarged. No other secondary growths were found. Above the stricture there was a marked pouch. There was fluid in the trachea. It had passed there in the act of swallowing. Cause of death, hypostatic congestion and cachexia.

There is a difference of opinion as to most common site of these strictures, but weight of evidence seemed to favor the upper part opposite the cricoid cartilage.

*Discussion.*—J. Caven says he has records of five cases. All are opposite the bifurcation of the trachea.

I. H. Cameron says he thinks the most common site is opposite the cricoid cartilage.

J. E. Graham says it is more common in the lower part.

I. H. Cameron and W. J. Greig gave the clinical history of a case of

#### FRACTURED SPINE.

The patient was standing on a pedestal seven feet high, throwing a belt off a pulley with a broom, which in coming around knocked him off the pedestal. He struck a post three feet away and fell on the edge of a board two feet from the ground. He was removed to the hospital, suffering severe pain in the neck on movement, priapism and paralysis as follows, described by G. A. Peters. Sensation lost from lower border of the second rib in front, also in distribution of the ulnar nerve (both sides), median nerve responded. Nerve of Wrisberg did not. Distinct response in scrotum and penis. Complete paralysis of lower extremities, both sensory and motor.

The biceps and triceps not affected. Loss of intrinsic muscles of the hand first dorsal eliminated probably the eighth cervical.

The distribution of the median and ulnar nerves could be differentiated in the hand. Death in less than twenty-four hours.

H. B. Anderson reported the following on post-mortem: Fracture extending through the cartilage between the sixth and seventh cervical vertibræ. The cord was lacerated. There was hæmorrhage in the substance of the dura mater. There was movement between the laminæ. No fracture of laminæ or of spinous processes; bodies not crushed; consolidation of most of the right lung and some of the posterior base of the left.

## Book Reviews.

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A MANUAL OF SYPHILIS AND THE VENEREAL DISEASES. By James Nevins Hyde, M.D., Professor of Skin and Venereal Diseases, Rush Medical College, Chicago; and Frank H. Montgomery, M.D., Lecturer on Dermatology and Genito-Urinary Diseases, Rush Medical College, Chicago. Profusely illustrated. Double number. Price, \$2.50 net. W. B. Saunders, publisher, 925 Walnut street, Philadelphia, Pa.

The authors' names are a sufficient guarantee that the contents of this volume are purely modern and complete. A manual is not a textbook, and should not be looked upon as such, but this work embraces so much matter, so concisely put, that it covers a large amount of ground in a small space. The different subjects are not lightly referred to, but there is an absence of verbosity that is charming. We can recommend the work as a great aid. The publishers have done their part in the same thorough manner as the authors.

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A SYSTEM OF PRACTICAL MEDICINE. By American authors. Edited by Alfred Lee Loomis, M.D., late Professor of Pathology and Practical Medicine in the New York University, and William Gilman Thompson, M.D., Professor of Materia Medica, Therapeutics, and Clinical Medicine in the New York University. To be completed in four imperial octavo volumes, containing from 900 to 1,000 pages each, fully illustrated in colors and in black. Vol. I., Infectious Diseases. Per volume, cloth, \$5; leather, \$6; half-morocco, \$7, Lea Brothers & Co., publishers, Philadelphia and New York.

The first volume of this work is to hand, and treats of the infectious diseases. Professor Loomis did not live to see the completion of the work, but he selected the authors for the various articles, and planned the groundwork of the entire system. Professor W. Gilman Thompson completed the editorial work. There are no general articles on hygiene, bacteriology, etc., nor is there any attempt to treat of the great specialties, gynæcology, dermatology, ophthalmology, etc., etc. Each article is complete in itself, and a large portion of the work is wisely devoted to treatment, since, as Professor Thompson states, the main object of our knowledge is to enable us to prevent, relieve, or cure.

The first article is on malaria, and occupies 137 pages. The parasitology is treated by Professor Wm. H. Welch, of Baltimore, who gives a most exhaustive review of the work of the modern observers. The

article is a masterly one, but we believe condensation would make it more acceptable to the general practitioner.

Manson's theory that the mosquito is the extra-corporeal host of the malarial parasite is mentioned, but it appears to us that sufficient prominence is not attached to the experiments of Surgeon-Major Ross in its support. These experiments showed that the plasmodia upon reaching the stomach of the mosquito develop into flagellated bodies. He also administered to a perfectly healthy native some water in which a couple of malariaized mosquitos had died after depositing their eggs, the latter being swallowed with the water. Eleven days later the man had fever, etc., and the plasmodium was found in the blood. It is easy to conceive how man might become affected from swallowing such water or inhaling the plasmodia in dust from dried up pools. The remainder of the article is by Thayer, of Baltimore, and it would be difficult to improve upon it. Indeed, the whole subject of malaria, upon which modern research has thrown so much light, is treated in a masterly manner.

Hamilton West, of Galveston, writes the articles on dengue and dysentery, and the latter is a very clear and sensible description of the different forms of a diseased condition concerning which the majority of the profession have very hazy ideas indeed.

James C. Wilson of Philadelphia is the author of the articles on enteric fever and influenza, and it goes without saying that they are excellent. The description of the clinical phenomena is accurate, and the many useful, practical hints show how painstaking an observer he has been. For example, he states that the persistence of splenic enlargement after convalescence is established indicates the probability of a relapse. His prognosis in cases of hæmorrhage is more discouraging than that of many other observers, for he says that statistics prove that from 30 to 50 per cent. of cases in which hæmorrhage occurs die either of exhaustion or from subsequent perforation and peritonitis. His statement that choreic movements usually cease during an attack of enteric fever opens up an interesting field of enquiry as to the reason. He has very pronounced views upon the treatment, and says that clinical and pathological considerations are alike opposed to the antiseptic plan of treatment. Solid food he says should not be given until one week after convalescence is established. He is a warm advocate of the Brand method of treatment and says that it diminishes the sufferings of the individual and reduces the general mortality at least one half.

He has nothing good to say of the purgative plan of treatment and warns us against the administration of laxative drugs after the middle of the second week; he thinks also that large enemata, especially if administered with some energy, are not without danger.

He considers Pfeiffer's bacillus as the specific cause of influenza. He very properly draws attention to the fact that the accompanying pneumonia is frequently apical and occasionally runs a very protracted course—the high and irregular temperature continuing for several weeks, the rapid wasting, apical dulness, diffuse subcrepitan râles, and sweat-

ing rendering the clinical picture very like that of galloping consumption, which is also a common complication. Examination of the sputum for tubercle bacilli is imperative. We cannot agree with his statement that no difficulty attends the differential diagnosis between influenza and ordinary sporadic catarrhal fevers, but we cordially endorse his views with regard to the use of quinine which, he says, in small doses is without effect, whilst in large doses it simply augments the sufferings of the patient.

Alvah H. Doty whose position as health officer of the port of New York has given him exceptional facilities for the study of the disease contributes a very useful article on typhus.

The article on relapsing fever by Warren Coleman of New York is satisfactory.

Surgeon General Sternberg, of Washington, is an acknowledged authority on yellow fever, and his article will enhance his reputation. He does not consider it a strictly contagious disease like smallpox, but more closely allied to typhoid and cholera, the poison probably leaving the body with the excreta. The specific germ, he says, has not yet been isolated.

Cholera is described by John M. Byron late resident physician at the New York quarantine hospitals. The bacteriology is treated in the practical manner which characterizes all the articles in the volume. He has little faith in internal antiseptic treatment, and condemns the use of opium by mouth. But his experience with hypodermoclysis and enteroclysis has been very favorable. For the former he uses an ordinary fountain syringe attached to a small aspirating needle and slowly introduces from one to four pints of normal salt solution with stimulants if indicated. In extreme collapse this is repeated every hour or two. For enteroclysis he likes a 2 per cent. solution of tannic acid, or creolin of the same strength introduced slowly through a long rectal tube. He thus treated 72 cases at Swinburne Island, many of which were brought from the ship in an almost moribund state and 20 (or 27 per cent.) died; 46 others with distinct prodromic symptoms of cholera all recovered. Dr. Byron's death necessitated a foot note by the editor referring to Dr. Haffkine's experiments with preventive inoculations carried on by himself and Dr. Simpson in India. Dr. Simpson claims that the chances of death among inoculated subjects are 22.62 times smaller than they otherwise would be. If these results are confirmed this dreaded scourge will lose most of its terrors.

Wm. M. Welch, physician in charge of the contagious diseases hospital of Philadelphia, contributes four articles, viz., The Plague, Smallpox and Varioloid, Vaccinia, and Varicella. We think his statement that no specific micro-organism of the plague has been found is scarcely justifiable in the light of Kitasato's discovery of a bacillus in the blood and enlarged lymphatic glands, inoculation of animals with which caused their death with the symptoms of true plague. Nor is any reference made to the belief, prevalent in Bombay, that rats die of the plague, are

eaten by ants, and that the latter carry the bacilli to the food and water. And no reference is made to Yersin's claim that an antitoxic serum prepared by him was used with remarkable success in Amoy in 1895, many persons already comatose when the injections were made having been cured. The article on vaccinia is extremely interesting and should be read by every physician.

One of the most interesting articles in the volume is that on Epidemic Cerebro-spinal meningitis, by Latimer of Baltimore. He quotes extensively from the report on the Lonaconing epidemic of 1893, by Fiexner and L. F. Barker, formerly of Toronto. The relation of the disease with the pneumococcus lanceolatus, the organism most frequently found, and its frequent association with croupous pneumonia, are fully discussed. He believes that its epidemic prevalence is "probably due to the influence of external conditions on the individuals affected, rendering them more susceptible to the pathogenic action of the infecting microbe," and suggests the possibility of other microbes or their toxins being associated with the pneumococcus and increasing its virulence.

Atkinson, of Baltimore, in his articles on Septicæmia and Pyæmia, gives a full and very interesting description of the bacteriology. He describes the symptoms of the former under the three headings—septic intoxication, septic infection, and fermentation fever and evidently the use of antistreptococcic serum finds no favour with him, for he does not even mention it.

P. Gervais Robinson, of St. Louis, contributes the article on Scarlet Fever. He inclines to the belief that "there is a disease of cows the virus of which is capable of causing scarlet fever when introduced into the human being," and says "that in all epidemics the origin of which is obscure the milk supply should be carefully scrutinized." Membranous affections of the throat occurring in the course of scarlet fever may, or may not be diphtheritic, even when they involve the whole pharynx, as well as the larynx and nose. Examination for Loeffler's bacillus is necessary, and if found the prognosis is very grave.

J. P. Crozer Griffith, of Philadelphia, contributes the articles on Rubeola, Rubella (Rotheln), Pertussis, and Epidemic Parotiditis; and they are all excellent.

One of the most important articles is that on Diphtheria, by William Hallock Park, visiting physician to the hospitals of the health department of New York city. Few men have had larger experience with the antitoxin treatment and he is a most enthusiastic advocate of its use both as a curative and immunizing agent. In view of such results as are reported by him and countless other careful observers, we do not understand how any sane and conscientious physician can any longer ignore this remarkable curative agent. And yet we know there are many physicians in this city so wedded to the past that they have not yet injected diphtheria antitoxin for the first time. Minute instructions are given for the bacteriological examination of the exudate and for the

performance of intubation of the larynx. We have no hesitation in pronouncing Dr. Park's article the best we have read on the subject.

Osler devotes 120 pages to tuberculosis, and, like the other work of this distinguished Canadian physician, it is almost beyond criticism. Space will not permit an extended review. In view of the number of sidewalk and street-spitters the following statement is comforting: "It is probable that all tuberculous sputum exposed in the open air is fully sterilized by the time that it has become desiccated and capable of transmission." Of the results of blood-serum therapy, he says it is not yet possible to speak with any confidence, although Maragliano claims most remarkable results.

A terse, practical, and splendidly-written article on "Syphilis" is contributed by W. F. Robinson, of Chicago. He does not discuss theories, but the facts are clearly stated, and the careful student of the article will find himself well equipped to diagnose and treat the disease. Doubt is expressed as to the possibility of paternal transmission to the child without infection of the mother. He claims that she is the possessor of the disease in a modified form, and as such possessor can transmit it to her offspring, and if she remains uninfected the child will undoubtedly escape, but cannot offer any explanation why the mother sometimes manifests no symptoms. We think the theory that the mother may acquire immunity through the child (somewhat as one can acquire immunity to smallpox through vaccination) without actually acquiring the disease fits in better with the facts.

Leprosy is treated by Isadore Dyer, of New Orleans, in a brief well-written article.

James Stewart, of Montreal, contributes a very interesting account of tetanus. In all cases of wounds contaminated with earth, manure, etc., he advises a thorough bacteriological examination for tetanus bacilli. Splinters of wood, rusty nails, etc., removed from a wound should also be examined. The suspected material should be injected under the skin of a mouse, and if the animal dies in two or three days with symptoms of tetanus, the patient should be injected with anti-toxic serum. If the secretions of the wound are found to contain the tetanus bacilli it may be justifiable to excise the infiltrated parts or even to amputate. If the symptoms of tetanus have set in, excision, cauterization or amputation is useless. Tizzoni-Cattani's preparation—an aseptic serum in a dessicated state—is recommended, as it will keep for an indefinite length of time. It probably has no influence on the poison already absorbed, but prevents its further development.

The presswork, printing, illustrations, etc., are a credit to the publishers.

## Medical Items.

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DR. F. E. GRANT has removed from Conestogo, Ont., and located in Athens, Mich.

DR. A. T. WATT has been appointed Dominion Quarantine Officer for British Columbia.

DR. GEORGE R. McDONAGH left Toronto in March for London, England, where he will remain a few weeks.

DR. IRELAND, Trinity '87, who was in Matabeleland during the uprising, and was wounded, is home for a short holiday.

SIR W. H. HINGSTON and Dr. F. G. Roddick, of Montreal, have been elected Honorary Fellows of the Medical Society of London England.

THE Board of the Ontario Medical Library acknowledge the receipt of "American System of Medicine," Vol. I., and eight volumes of Transactions of American Orthopædic Association.

DR. J. E. GRAHAM, of Toronto, went to Atlantic City, April 7th, for a short holiday. He will probably attend the Congress of American Physicians and Surgeons in Washington, May 4th, 5th, and 6th.

SIR HENRY D. LITTLEJOHN, M.D., LL.D., who distinguished himself as a sanitarian while Medical Health Officer of Edinburgh, and was for some time a lecturer on Medical Jurisprudence in the Extra-Academical School of Edinburgh, has been appointed Professor of Forensic Medicine in the University of Edinburgh, in the place of Sir Douglas Maclagan, resigned.

DR. COVENTRY, the president of the Ontario Medical Association, has appointed the following Committee on Papers and Business for the next meeting, to be held in Toronto, June 2nd and 3rd: Drs. W. A. Britton (chairman), J. A. Temple, A. H. Wright, F. Le M. Grasset, J. E. Graham, B. Spencer, of Toronto; A. D. Smith, of Mitchell; D. S. Bowlby, jr., Berlin; John Dunfield, Petrolia; J. Dewar, Windsor; C. W. Hoare, Walkerville; R. W. Powell, Ottawa; James Third, Kingston; T. F. Holmes, Chatham; R. Raikes, Barrie.

## ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

The sixty-fifth annual meeting of the British Medical Association will be held at Montreal on Tuesday, Wednesday, Thursday, and Friday, August 31st, September 1st, 2nd, and 3rd, 1897.

President—Henry Barnes, M.D., M.R.C.S., F.R.S.E., J.P., Physician Cumberland Infirmary, Carlisle. President-elect—T. G. Roddick, M.D., M.P., Professor of Surgery in McGill University, Montreal. President of the Council—Robert Saundby, M.D., F.R.C.P., 83 Edmund street, Birmingham. Treasurer—Charles Parsons, M.D., Dover.

Addresses will be delivered as follows: Medicine—Dr. W. Osler, F.R.C.P., Professor of Medicine in the Johns Hopkins University, Baltimore, U.S.A. Surgery—Mr. William Mitchell Banks, F.R.C.S., Surgeon to the Liverpool Royal Infirmary. Public Medicine.—

The scientific business of the meeting will be conducted in eleven sections, as follows, namely:

*Medicine.*—President—Dr. Stephen Mackenzie, London. Vice-presidents—Dr. J. E. Graham, Toronto; Dr. W. Bayard, St. John, N.B.; Dr. J. P. Rottot, Montreal; Dr. F. W. Campbell, Montreal; Dr. J. Stewart, Montreal; Dr. H. P. Wright, Ottawa. Secretaries—Dr. H. A. Lafleur, Montreal; Dr. W. F. Hamilton, Montreal: Dr. William Pasteur, 4 Chandos street, Cavendish Square, London, W.

*Surgery.*—President—Mr. Christopher Heath, London. Vice-presidents—Sir William Hingston, Montreal; Hon. Dr. Sullivan, Kingston, Ont; Hon. Dr. Farrell, Halifax, N.S.; Dr. I. H. Cameron, Toronto; Dr. F. LeM. Grasset, Toronto; Dr. James Bell, Montreal; Dr. G. E. Armstrong, Montreal. Secretaries—Dr. R. C. Kirkpatrick, Montreal; Dr. Thomas Walker, St. John, N.B.; Mr. Jordan Lloyd, F.R.C.S., Richmond Hill, Birmingham.

*Obstetrics and Gynecology.*—President—Prof. W. J. Sinclair, Manchester. Vice-presidents—Dr. William Gardiner, Montreal; Dr. James Perrigo, Montreal; Dr. J. A. Temple, Toronto; Dr. J. C. Cameron, Montreal; Dr. T. J. Alloway, Montreal; Dr. James Ross, Toronto. Secretaries—Dr. D. J. Evans, Montreal; Dr. W. Burnett, Montreal; Dr. A. E. Giles, 58 Harley Street, Cavendish Square, London, W.

*Public or State Medicine.*—President—Dr. E. P. Lachapelle, Montreal. Vice-presidents—Dr. R. Craik, Montreal; Dr. Montizambert, Quebec; Dr. P. H. Bryce, Toronto; Dr. Sir James Grant, Ottawa; Dr. R. H. Powell, Ottawa. Secretaries—Dr. Wyatt Johnston, Montreal; Dr. E. Pelletier, Montreal; Dr. Henry Littlejohn, Town Hall, Sheffield.

*Psychology.*—President—Dr. R. M. Bucke, London, Ont. Vice-presidents—Dr. D. Clark, Toronto; Dr. T. J. Burgess, Verdun, Que.; Dr. A. Fallee, Quebec; Dr. G. Wilkins, Montreal. Secretaries—Dr. J. V. Anglin, Montreal; Dr. George Villeneuve, Montreal; Dr. J. G. Blandford, London County Asylum, Banstead, Surrey.

*Anatomy and Physiology.*—President—Dr. Augustus Waller, F.R.S., London. Vice-presidents—Dr. F. Shepherd, Montreal; Dr. A. B. Macallum,

Toronto; Dr. T. Wesley Mills, Montreal; Dr. A. Primrose, Toronto; Dr. J. B. A. Lamarche, Montreal; Dr. D. B. Fraser, Stratford, Ont. Secretaries—Dr. J. M. Elder, Montreal; Dr. W. S. Morrow, Montreal.

*Pathology and Bacteriology.*—President—Mr. Watson Cheyne, F.R.S., London. Vice-presidents—Dr. J. G. Adami, Montreal; Dr. J. Caven, Toronto; Dr. J. Stewart, Halifax; Dr. J. C. Davie, Victoria; Dr. L. C. Prevost, Ottawa; Dr. M. T. Brennan, Montreal. Secretaries—Dr. W. T. Connell, Kingston; Dr. C. F. Martin, Montreal. Dr. Rubert Boyce, University College, Liverpool.

*Ophthalmology.*—President—Mr. Edward Nettleship F.R.C.S., London. Vice-presidents—Dr. F. Buller, Montreal; Dr. R. A. Reeve, Toronto; Dr. Ed. Desjardins, Montreal; Dr. A. A. Foucher, Montreal. Secretaries—Dr. W. H. Smith, Winnipeg; Dr. Jehin Prume, Montreal; Dr. T. H. Bickerton, Liverpool.

*Pharmacology and Therapeutics.*—President—Dr. D. J. Leech, Manchester. Vice-presidents—Dr. A. D. Blackader, Montreal; Dr. James Thorburn, Toronto; Dr. C. R. Church, Ottawa; Dr. J. B. McConnell, Montreal; Dr. F. J. Austin, Sherbrooke; Dr. Walter George Smith, Dublin. Secretaries—Dr. F. X. L. DeMartigny, Montreal; Dr. J. R. Spier, Montreal; Dr. C. R. Marshall, Dowling College, Cambridge.

*Laryngology and Otology.*—President—Dr. Greville Macdonald, London. Vice-presidents—Dr. W. Tobin, Halifax; Dr. G. A. S. Ryerson, Toronto; Dr. H. S. Birkett, Montreal; Dr. G. R. McDonagh, Toronto. Secretaries—Dr. Chretien, Montreal; Dr. H. D. Hamilton, Montreal; Dr. W. Permewan, 7 Rodney street, Liverpool.

*Dermatology.*—President—Mr. Malcolm Morris, London. Vice-presidents—Dr. J. E. Graham, Toronto; Dr. F. J. Shepherd, Montreal; Dr. J. A. S. Brunelle, Montreal; Dr. J. L. Milne, Victoria. Secretaries—Dr. Gordon Campbell, Montreal; Dr. J. M. Jack, Montreal; Dr. James Galloway, 21 Queen Anne street, Cavendish Square, London, W.

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#### OBITUARY.

GEORGE DAVID POLLOCK, F.R.C.S.—Mr. G. D. Pollock, Surgeon in Ordinary to the Prince of Wales, Consulting Surgeon to St. George's Hospital, died February 16th, 1897. It may be of interest to many Canadians to learn that this distinguished surgeon was for some time attached to the person of Lord Metcalf when the latter was Governor-General of Canada.

THOMAS EDWARD SOUTH, M.B.—Dr. Thomas E. South died at his late residence, Cainsville, April 7th, 1897, aged 31. He received his medical education in Toronto University, and graduated in 1893. He was a very good student, and took a high standing at all the annual examinations. At the final examination he was second on the list, and was awarded the first silver medal. He was appointed a resident

assistant in the Toronto General Hospital in June, 1893. During the last three years he was practising at Cainsville, in Brant county.

JOHN W. ROSEBRUGH, M.D.—Dr. Rosebrugh died at his home in Hamilton, Thursday, March 25th, after a short illness from septicæmia, following la grippe. He was 69 years of age, but he was a hale, well-preserved man, and seemed likely to be good for active work for many years to come. The news of his death was a great surprise to his many friends, most of whom had previously heard nothing about his illness. He became a Licentiate of the Medical Board in 1852, received the degree of M.D. from the University of New York in 1853, also M.D. from the University of Victoria College in 1855. Early in his professional career he met with success, and obtained a large practice in Hamilton. He acquired a widespread reputation as a gynæcologist, and was one of the pioneers in abdominal surgery in Canada. He was an earnest worker in various medical societies, especially the Canadian and the Ontario Medical Associations. In 1887 he was elected president of the last-named society. In his private life he was highly esteemed by those who knew him intimately.