

Current Literature.

Some Observations on the Excretion of Typhoid Bacilli by Carriers (Chronic) [Beobachtungen über die Ausscheidung der Typhusbacillen durch Bacillenträger (Dauerausscheider)].—Dr. Albert Hirschbruch has published in the *Berl. klin. Wochenschr.*, No. 25, 1914, some interesting observations which he has made on the excretion of typhoid bacilli by chronic carriers.

The first series of his observations was to determine the *modus operandi* of periodical carriers. This meant frequent examinations. In four cases he conducted a daily examination of both urine and fæces during several weeks. In these cases he did not find a lengthy positive period followed by a lengthy negative one. As a rule typhoid bacilli were only occasionally found, sometimes several days running, but on the whole the positive days appeared quite irregularly in the long series of negative days. The oftener the result of the examination is negative, the more difficult will it be to pronounce the case as being no longer a carrier.

The writer quotes two cases of irregular carriers, both women. (1) V. Her excreta were examined daily for several weeks. She gave a negative reaction fifty-two times before she gave another positive. She died a few days after the positive finding. Typhoid bacilli were found in the body.

(2) M. Her excreta were examined once a month for several years. A positive finding was made on March 1, 1910, after a long negative phase; on this occasion typhoid bacilli were demonstrated in both urine and fæces. The subsequent monthly examinations were negative on forty-nine occasions. She again gave a positive reaction on January 8, 1914. The interval was therefore over three years and ten months.

A second series of observations was directed towards determining the number of typhoid bacilli excreted by regular carriers.

Of the examples, he quotes one case which excreted 32·4 million bacilli per gramme of fæces, and another which on three different examinations was shown to excrete 39 million, 239·6 million, and 259·5 million typhoid bacilli per gramme of fæces.

Where lengthy negative intervals exist, it is useful to know what drugs will produce a positive phase.

(a) One case experimented on showed positive results after almost any purgative; the effects of different drugs, however, vary. Oil of sesame alone did not cause excretion of typhoid bacilli, but the addition of $\frac{1}{4}$ drop of croton oil to the oil of sesame had the desired effect. A few typhoid colonies developed on a Drigalski plate. A repetition on the following day gave the same result. The following day no more typhoid bacilli were found in the stools.

A tablespoonful of castor oil brought typhoid bacilli out in large quantities every time it was used.

During intervals between purgation this patient never showed any bacilli in the excreta.

(b) Further experiments on two inmates of a lunatic asylum with Karlsbad salts, croton oil, castor oil, aloes with podophyllum, etc., proved that periodical carriers cannot always be made to excrete bacilli by administering purgatives.

(c) Of seven other periodical carriers (all inmates of a lunatic asylum) only one was made to excrete typhoid bacilli by the administration of castor oil; but four of them reacted to aloes and podophyllum, which was administered in pill form in the morning.

On the other hand, in active or regular carriers the excretion of typhoid bacilli in the stools can be arrested for a time by the administration of drugs, the most effective so far discovered being calomel with tannoform. In the case of a woman reported on who was excreting up to 227.5 million typhoid bacilli per gramme of faeces, calomel was administered in the form of a powder three times a day for two days. After the fifth powder no typhoid bacilli could be demonstrated either on Drigalski or with the aid of a malachite agar. The examination of this stool revealed only 2 million bacteria per gramme, whereas on the morning before the experiment the stool contained 350 million bacteria, eight per cent. of which were typhoid bacilli. This experiment was performed four times at short intervals on the same individual; on the first two occasions typhoid bacilli had disappeared after the third dose of calomel.

The writer suggests that a stock mixture of calomel-tannoform should be kept in laboratories for workers who may inadvertently suck typhoid bacilli into their mouths through pipettes.

He repeats that aloes and podophyllum will not always cause the excretion of typhoid bacilli, but they sometimes do so when castor oil fails. One must not think that a periodical carrier who has loose stools need necessarily be excreting typhoid bacilli; the first case, V., mentioned in the paper, which gave fifty-two consecutive negative reactions, had loose motions throughout, and gave a positive result only after the administration of castor oil.

Those cases which reacted to aloes and podophyllin excreted typhoid bacilli, some by the faeces, others by the urine; the explanation for the latter cases being that aloes also produces a hyperaemia of the kidneys.

A further point observed was that the first stool after a dose of aloes and podophyllin did not always contain typhoid bacilli; therefore, it is suggested that a sample of all the stools passed for some days after the purgative had been administered should be examined.

The writer is of opinion that before pronouncing any convalescent case bacteriologically cured a final test with aloes and podophyllin

should be carried out. This drug should, of course, not be administered if there is still any risk of harming the intestine.

J. V. F.

Culture Medium for the Tubercle Bacillus.—S. R. Douglas (*Lancet*, October 14, 1914, p. 892) allows a mixture of one pound of pulped uncooked potatoes with one litre of water to stand at room temperature for twelve or twenty-four hours. The fluid is next strained through muslin and autoclaved at 115° C. Acetic acid is added to the hot liquid until faint acidity is produced. After filtration the fluid is rendered slightly alkaline to litmus, and 0.25 per cent glucose, 5 per cent glycerine, and 200 c.c. per litre of a 2 per cent slightly alkaline solution of plasmon are added. Clearing by boiling with white of egg, tubing and sterilizing by steaming for thirty minutes on three successive days complete the process. The growth of the tubercle bacillus on agar prepared with this potato-plasmon extract is abundant and adheres but slightly to the surface.

C. B.

Substitute for Witte's Peptone.—S. R. Douglas has overcome the difficulty arising from the present deficiency in the supply of Witte's peptone in this manner (*Lancet*, October 14, 1914, p. 891). A minced bullock's heart is heated to 70° or 80° C. in four litres of water rendered faintly alkaline to litmus. After cooling to 45° C., digestion is carried out at 37° C. for two or three hours by means of the addition of one per cent of Allen and Hanbury's liquor trypsinæ. The fluid is then faintly acidified with acetic acid and is boiled. After straining through muslin this broth is made slightly alkaline to litmus, and after the addition of 0.0125 per cent calcium chloride and 0.25 per cent sodium chloride, is autoclaved at 115° C. for one hour to precipitate the phosphates, filtered, tubed, and sterilized. For agar jelly the powdered agar should be mixed with the broth before precipitating the phosphates. The growth of bacteria is more luxuriant than in media prepared with peptone in the usual manner. The cost is less.

C. B.

A Case of Frost-bite and its Treatment (A. Kuhlmann, *Journ. Minnesota State Med. Assoc.*, Minneap., 1909, xxix, p. 359).—"Male, aged 28. Had been drinking; fell asleep on the road; was picked up unconscious. Was rubbed with snow; regained consciousness. Legs were frozen hard half-way up to the knees, hands above wrists. Legs much swollen. Temperature 102° F.; pulse 103.

"*Treatment.*—Blebs opened, sloughing skin and tissue removed; irrigation with a warm bichloride solution 1:5000. Frozen surface was powdered with zinc stearate and bandaged loosely. The upper part of the reddened swollen legs was treated with a weak warm bichloride application to produce hyperæmia and draw out the inflammation. A tablespoonful of mag. sulph. was given to favour elimination, and

$\frac{1}{4}$ gr. of morphine was administered hypodermically to relieve pain. Warm applications on the legs were kept up all night. Next day so much sloughing that I worked from 9 a.m. to 1 p.m. removing the sloughing nails and dead tissue. Next morning swelling had subsided and circulation became more apparent. Temperature 100° F.; pulse 80. Was dressed twice a day for two weeks. In the morning, after cleaning and irrigating with boric acid solution, the frozen surface was dusted with zinc stearate powder. I put a loose veil of sterile gauze around the elevated and suspended extremities for two reasons: to relieve pressure and to give access to air. At night, after cleaning and irrigating, the extremities were well covered with sterile gauze surrounded with sterile cotton and loosely bandaged. The open treatment, with the surface well powdered with zinc stearate, proved by far the best. There was not much sloughing and pus formation, but a crusting drying process. To my surprise I found that every day some apparently dead, lost parts would resume circulation and repair. After four weeks' treatment seven fingers and seven toes were partly amputated, all else was preserved."

The following information on Swiss Red Cross Work for 1912 has been extracted from the "Revue Militaire Suisse" for April, 1914.—The Central Society of the Swiss Red Cross at the end of 1912 comprised 33,719 members and 311 associations. Directly affiliated to the Central Society at home, there are 179 members and 61 abroad. There are 948 associations in the country and 38 abroad.

Central funds for the same period amounted to 284,577 francs. This represents an increase of 44,309 francs on the previous year, due chiefly to the sale of cards in 1912. The total funds of the sections at the end of 1912 were 434,193 francs, an increase of 11,546 francs.

The Red Cross in 1913 collected 168,213 francs in aid of the victims of the Balkan War.

The number of Red Cross columns is twelve. They are at Aaran, Bâle, Berne, Bienne, Glaris, Herisau, Horgen, Lucerne, Schaffhausen, St. Gall, Winterthur, and Zurich.

The report by the Central Society mentions notable progress in the training of the personnel allotted to territorial medical establishments. The Central Society has succeeded in raising the twenty-four Red Cross detachments required by the new Army Medical Regulations. Each detachment consists of forty well-instructed professional female nurses, with a senior sister in charge. This is considered a sufficient staff for nursing about 500 cases.

The territorial medical service in time of war thus disposes of 960 infirmières, who will look after 10,000 beds at least.

The nine following establishments supply Red Cross detachments:—

(1) The schweiz Pflegerinnenschule of Zurich: 4 detachments = 160 sisters.

(2) The Schwesternhaus of the Red Cross of Fluntern-Zurich: 1 detachment = 40 sisters.

(3) The Diakonissenhaus of Neumünster-Zurich: 2 detachments = 80 sisters.

(4) The Institute of Ingelbohl: 5 detachments = 200 sisters.

(5) The Diakonissenhaus of Richen: 2 detachments = 80 sisters.

(6) The Rot-Kreuz Pflegerinnenschule of Berne: 2 detachments = 80 sisters.

(7) The Diakonissenhaus of Berne: 2 detachments = 80 sisters.

(8) La Source Evangelical School of Nurses at Lausanne: 5 detachments = 200 sisters.

(9) St. Loup, Institute of Diakonesses: 1 detachment = 40 sisters.

The Swiss League of Samaritans included at the end of 1912 263 detachments, comprising 11,368 members, viz.: 6,994 men and 4,374 women. A small number of societies are attached directly to the Central Red Cross Society. Help has been rendered 19,290 times, and the transport has been used 1,041 times. Funds: 2,754 francs. The Swiss League of Samaritans received a subsidy of 800 francs from the Confederation in 1912, the Central Red Cross Society gave them 1,400 francs, to which should be added 11,587 francs for equipment of various kinds.

The Société sanitaire militaire suisse comprises all medico-military societies in Switzerland. On January 1, 1913, it had twenty-six sections and 738 active members. During the year it organized 404 conferences and exercises.

J. V. F.

Disinfection of Apartments occupied by Tubercular Patients (Wohnungdesinfektion bei Tuberkulose).—Karl Laubenheimer, in the *Zeitschr. für Hyg. und Infektionskrankh.*, Bd. lxxvii, 1914, deals with this controversial question, and describes how he set about putting to the test the various methods prescribed by law in Prussia, Würtemberg, and Baden. To obtain conditions resembling reality he spread tubercular sputum first on smooth deal boards, then on wood painted with oil colours. These were allowed to dry at room temperature in diffuse daylight, twenty-four to forty-eight hours being usually sufficient time to allow. The pieces of wood were then kept in the dark until required for the tests. After the application of the disinfectant the sputum was removed from the boards; a sample of each was injected into two guinea-pigs subcutaneously, one being killed after an interval of four weeks, the other after six weeks. In this way the officially prescribed disinfectants were tested, the 5 per cent cresol soap solution, the 0.1 per cent sublimate solution, and the formaldehyde gas; further experiments were made with a 0.5 per cent sublimate solution recommended by Flügge, also with a 0.3 per cent sublimate solution, and lastly experiments with new disinfectants, phobrol (a

mixture of chlor-m-cresol and razineolsauren kali) and grotan (another chlor-cresol preparation).

The writer came to the following conclusions:—

(1) Neither formaldehyde, nor the 0·1 per cent sublimate, nor the five per cent cresol soap solutions succeed for certain in killing tubercle bacilli in thick dried sputum even after nine hours' application.

(2) The best results were obtained from formaldehyde, especially when the sputum had dried on something which was impervious to water.

(3) The 0·1 per cent sublimate and the five per cent cresol soap were useless.

(4) A mixture of formaldehyde gas with solutions of 0·1 per cent sublimate or five per cent cresol soap gave unsatisfactory results. A mixture of formaldehyde with phobrol seems to be satisfactory.

(5) Certain destruction of tubercle bacilli in thick dried sputum could only be obtained with a 0·5 per cent sublimate solution and a two per cent phobrol solution, but only when the solution was allowed to act for at least five hours.

As phobrol is not poisonous and is suitable for general employment (it does not attack metal), Laubenheimer recommends it in a two per cent solution as a disinfectant in tubercle. A one per cent solution is sufficient for other infectious diseases.

J. V. F.