carcinoma), encephaloid (acute mammary carcinoma), colloid carcinoma, intracystic carcinoma (duct cancer), alveolar sarcoma, melanotic epithelioma, melanotic sarcoma, osteoid sarcoma, myxoma, chloroma, and intracystic sarcoma, with a few more of dubious authenticity. Stratford-place, W.

THE PLATE CULTIVATION OF ANAEROBIC BACTERIA.

BY H. S. FREMLIN, L.R.C.P. LOND., M.R.C.S. ENG.

I HAVE previously described¹ a method of plate cultivation of bacteria under anaerobic conditions. The essential features were the use of pyrogalllic acid in alkaline solution for the absorption of oxygen, a small air space, and an efficient seal to the apparatus so that there could be no leakage of air into the chamber in spite of the partial vacuum created by the action of the pyrogalllic acid. In addition I advocated the use of a colour test as a means of indicating when all free oxygen in the apparatus had been absorbed. I showed that methylene blue in the presence of sugar and an alkali furnished a most delicate test of the presence of oxygen, the blue colour disappearing when all oxygen has been removed or absorbed and returning if fresh oxygen be admitted, so that the colour test might be relied on to indicate whether anaerobiosis had been set up and maintained or not.

The apparatus I then described was designed to hold only one plate but I have since used an apparatus having a larger capacity so that it is capable of holding six plates. This apparatus is designed on precisely the same principles as the smaller one. It consists of a glass chamber seven and a half inches high and five inches in diameter, having the rim turned out in a wide flange. This flange is carefully ground. The lid has a corresponding well-ground surface, so that these ground surfaces of chamber and lid fit accurately. A copper stand, somewhat similar to that used in the Botkin apparatus, is used to hold the plates; it differs from the Botkin stand, however, in having two moveable handles to allow it to be raised from, and lowered into, the chamber and in having on one side carriers to support a small test-tube in a vertical position; this test-tube is to contain the methylene-blue indicator.

To carry out the process required for the establishment of anaerobic conditions the method of procedure is as follows. The rim of the chamber is well vaselined, the plates are placed in the stand, and a small test-tube of ordinary sugar bouillon or other reducing fluid, coloured with a drop of saturated alcoholic solution of methylene blue, is placed in the support provided for it. Eight grammes of pyrogalllic acid are first introduced into the chamber, followed by 80 cubic centimetres of a 10 per cent. solution of caustic potash. The stand, carrying the plates and tube, is now lowered into the chamber by the handles and the lid is carefully put on. The whole apparatus can then be incubated. The process of the absorption of oxygen from the chamber and its contents by means of the alkaline pyrogallol solution can be noted by observing the change in colour of the methylene-blue indicator; as anaerobiosis is established the colour entirely disappears. If the colour does not disappear it is evident that there is a fault either in the apparatus or technique, and this must be found and remedied. It must be remembered that the absorption of oxygen within the chamber causes a considerable tendency to leakage of air inwards which must be prevented by careful attention to the seal. Bacteriologically the results obtained in this large chamber are quite satisfactory and, as before, I have found that the bacillus tetani can be readily grown in it.

I find sugar bouillon, coloured with methylene blue, convenient as an indicator, as sugar bouillon is always at hand in a laboratory. A reducing fluid prepared with water, glucose, and alkali is equally effective. Methylated spirit with a little alkali and coloured with methylene blue furnishes an even more delicate reagent, but when incubated at 37° C. sufficient spirit evaporates to check the growth of bacteria in cultivation. I do not, therefore, advise its use. I have compared the methylene-blue test with the reaction of alkaline pyrogallol solution in the presence of

oxygen. A solution of caustic potash was poured into a beaker and some crystalline pyrogalllic acid was placed in a watch-glass and supported over the beaker in such a position that it could be shaken into the alkaline solution below. The beaker and watch-glass and a control tube of sugar broth coloured with methylene blue were placed in the large chamber, in which anaerobic conditions were then set up. When the methylene-blue solution was decolourised the watch-glass with its contained pyrogalllic acid was tilted into the alkaline solution in the beaker without opening the chamber; the mixture remained colourless. In another experiment the pyrogalllic acid was shaken into the alkaline solution *before* the blue colour had entirely disappeared from the methylene-blue tube. Here again the pyrogalllic alkaline solution remained colourless. Hence it would seem that either methylene blue is a more delicate test for the presence of oxygen, or else that the oxygen which enters into combination with the methylene blue is more difficult to extract than the oxygen entangled in the caustic potash solution.

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CASE OF SPONTANEOUS GANGRENE OF THE SKIN IN A HYSTERICAL FEMALE.

BY W. A. MEARNES, M.A., M.B. ABERD.

THE following notes on a case of the so-called spontaneous gangrene of the skin in hysteria may be of interest.

The patient, aged 24 years, consulted me about the middle of January, 1904, for a skin trouble on the lower part of her neck. She was a delicate girl, very anæmic, and was known to be of a hysterical disposition. She was very irregular in menstruation. The skin lesion was of the nature of a dark red spot on the lower part of the neck and just about the middle third of the right clavicle. The area involved was rather larger than a half-crown piece and had appeared, she stated, a day previously and had been preceded by a hot, burning sensation in the part affected. The lesion was somewhat obscured by an ointment which she had applied on her own initiative and a temporary diagnosis of herpes was made and a paint composed of one ounce of flexible collodion and one drachm of tincture of cannabis indica was ordered, while internally salicin, phenacetin, and quinine were given to combat the pain.

I did not see her until nearly a week later, when I was sent for, as her neck was said to be much worse. After examining it I found the original part involved to have become quite black in colour and evidently gangrenous and on raising the surface slightly with a forceps a sloughy débris of pus-like matter could be seen beneath. Adjoining this and extending downwards and inwards over the clavicle was another area of similar size but of a dull white colour. It was irregularly oblong in shape and was circumscribed by a narrow reddish margin. As in the former case the lesion had been preceded by a feeling of great heat and burning in the skin affected. The patient was in considerable distress and morphine in solution had to be resorted to in order to induce sleep. Ferrous carbonate biphosphates were also ordered. Boric acid fomentations were applied to the sloughing area and after a time this was successful in separating the slough and a raw, red surface was left exposed. By the next day the second area involved had become much blacker in colour and it also gradually became gangrenous and was separated as a slough by fomenting. Subsequently a new area of skin was attacked extending from the original spot up towards the right ear. Here also the same cycle of changes was seen, ultimately ending in gangrene of the diseased skin. The appearance was exactly as if the skin had been burned by a corrosive acid. Thereafter the lesions extended progressively below the clavicle down to the right breast, each in turn being of about the same size and the skin being always progressively involved. In all there were seven distinct areas affected.

As there was now a large raw surface and more careful dressing was requisite than could be got at her home I advised the patient to go into hospital and she was admitted into the Chalmers Hospital, Banff, under the care of my chief, Dr. W. Fergusson. After her admission there was no

¹ THE LANCET, Feb. 21st, 1903, p. 518.