

Only limited metabolic studies were possible because of the patient's serious condition. Urinary and fecal calcium determinations were done but are of no value as enemata were necessary for constipation. On an ordinary low protein diet, with little milk, the blood calcium was high, being 13.4 mgs. per 100 c.c. of blood, fell to 11.9 mgs. after three days of a low calcium diet, and rose to 12.7 mgs. on a high calcium diet for three days.

The other blood analyses showed the usual findings of a severe progressive, chronic nephritis with a marked lowering of the alkaline reserve.

The patient died 11 months after the first tumor masses appeared, and autopsy revealed a severe interstitial nephritis with a right hydronephrosis, calcium deposits in the wall of the left auricle, extensive and marked calcification of the smaller peripheral arteries, the arteries of the gastro-epiploic omentum, and the jejunum, but sparing the liver, spleen, lungs, kidneys and stomach, an osteitis fibrosa particularly marked in the skull, ribs and vertebræ, and two large parathyroid bodies, 2 c.m. in diameter, with some hyperplasia microscopically and a small adenoma in one.

Hyperplasia of the parathyroids has been described in a few cases of chronic nephritis but there appears to be no description of such extensive calcium changes as this case presents, except in metastatic calcification, and this man did not show the deposits in the lungs, kidneys and stomach, usually found in the latter condition.

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Studies on atmospheric requirements of bacteria.

1. Water vapor tension.

By **NICHOLAS KOPELOFF** and **STERNE MORSE**.

[From the Research Laboratories of the Psychiatric Institute, of The New York State Hospitals, Ward's Island, N. Y.]

Quantitative experiments on the relation between the growth of bacteria and the amount of water present have been limited to studies on the effect of water content of media, and are sur-

prisingly meager in the amount and character of the work done. Such investigations are limited to those of Wolf¹ and Weigert,² who working with different concentrations of media found definite limits of growth for various organisms. No investigation as to the effect of water vapor tension on surface colonies on a solid medium has apparently ever been made.

The method used for obtaining preliminary data as to the influence of atmospheric moisture on surface growth consisted in using either two tops or two bottoms of ordinary petri dishes which are placed edge to edge and held together with adhesive tape around the entire circumference giving practically an air-tight capsule. In the upper half, media was poured to a depth of 2 mm.; in the lower half, solutions of various dehydrating agents were placed to a depth of 5 mm.; about 2 cm., as a rule separating the two surfaces. 1/10 c.c. of a dilution of broth culture of the organism investigated, was spread on the surface of the poured medium and evenly distributed with a bent rod over the entire surface.

The organisms investigated were *B. coli*, *B. subtilis*, *Staphylococcus aureus*, and *Streptococcus hemolyticus*. The medium used was glucose infusion agar, *P_H* 7.0, and cultures were usually incubated 18 hours at 37.5° C. The dehydrating solutions used were glycerin, 50 per cent. glycerin, 50 per cent. calcium chloride (saturated) and 25 per cent. calcium chloride, giving initial relative humidities of 0, 25, 35, and 75 per cent. respectively at the start of the experiment. The rate of change of the water vapor tension with addition of water, of the glycerin solutions is, however, so much larger than that of the calcium chloride solutions, that with the conditions as above stated the drying action of the calcium chloride is usually somewhat more energetic than that of the glycerin.

Marked inhibition of growth of all organisms investigated was shown to take place under these conditions, the action being greater on the more delicate organisms and roughly proportional to the extent of the dehydration which occurs. This phenomenon is obvious in colonies as soon as they can be distinguished by the

¹ Wolf, L., *Archiv. f. Hyg.*, 1896, xxxiv, 200-209.

² Weigert, R., *Centbl. f. Bakt.*, I, Orig., 1904, xxxvi, 112-121.

microscope, *i.e.*, before extensive drying of the medium has occurred. The characters and appearance of all colonies investigated were profoundly modified by a change in this variable. Marked variation from controls over water occurs with the solutions used having a water vapor tension of 75 to 85 per cent. relative humidity, thus showing that a relatively slight departure from saturated conditions is of considerable importance in bacterial surface cultures.

It might be added that the simple device above described serves excellently for anaërobic plate cultures, with alkaline pyrogallate solution in place of the dehydrating solutions, dextrose-methylene blue media being easily decolorized and remaining so.

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Councilmania lafleuri, a new amœba of the human intestine.

By CHARLES ATWOOD KOFOID and OLIVE SWEZY.

[From the Zoölogical Laboratory, University of California, and the Bureau of Communicable Diseases, California State Board of Health.]

There exists some confusion and uncertainty among investigators of human intestinal amœbæ as to certain features of structure and activities of the non-pathogenic *Endamæba coli* (Loesch) Schaudinn. The points in debate are its habit of ingesting red blood corpuscles, its mobility in the free state, the existence of more than one type of cyst, the structure and location of the karyosome, the presence of cysts with an irregular number of nuclei (other than 2, 4, 8, 16), and the escape of amœbulæ from the cysts in fæces.

We believe these questions have arisen from the confusion hitherto by investigators, of two species, *Endamæba coli* and a new one, generically distinct, which we designate as *Councilmania*