

In addition it may be of interest to put on record the results of tests in two among a number of families<sup>8</sup> examined in which the results vary from those already published.

In one family both parents found the substance tasteless in each of three different tests, the father stating on two of these occasions that the substance was not at all bitter but only very slightly sour. Of the six children tested, five found the substance to be very bitter, the sixth child reporting the substance to be tasteless. On a retest of two of the children (one of whom was a non-taster), the results were confirmed.

In the second family the father found the substance to be very slightly bitter, remarking that he hardly would have noticed the taste. The mother found the substance tasteless. Of the six children tested, four children, the two oldest and two youngest, reported the substance to be tasteless, while two children, nine and seven years, respectively, found it to be bitter, in one case very bitter.

The parents and the children in each of the two families seemed to be quite intelligent and their responses to the test were definite. In neither of the two families was any suspicion of illegitimacy, either from the history or from blood tests.

It may be worth while mentioning that in his study Blakeslee found individuals who did not perceive a bitter taste but noticed a taste of another sort.

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### THE DISTRIBUTION OF CAECAL SPIROCHETES

FOLLOWING the studies made on spirochetes in chickens,<sup>1</sup> further observations have been made on the distribution and morphology of these organisms. The caeca from recently killed ducks, turkeys, guinea-hens, geese, squabs, lambs, calves and pigs were obtained and studied. Examinations of caecal contents and scrapings of caecal walls mounted in Ringer's solution were made by means of dark-field illumination. Films of caecal scrapings were stained by the potassium permanganate-gentian violet method of staining spirochetes.<sup>2</sup> All specimens of duck caeca examined showed the presence of spirochetes—long active treponemas, also small delicate treponemas, spironemas and the fusi-spirochaeta types. In several specimens, still warm, these showed extreme activity and indications of transverse division. In turkeys the various

forms of spirochetes were also present in all caeca examined. The same was also true of guinea-hens. The specimens of caecal scrapings from geese was markedly different, showing only an occasional spirochete, and many specimens showed none. Squabs showed no spirochetes in the intestinal tract at any point, and caeca were absent. The fresh warm caeca from lambs and calves were negative for spirochetes. In the caeca from pigs there was a variation, but in general spirochetes were only occasionally present in the specimens obtained.

The organisms observed in ducks, turkeys and guinea-hens appeared morphologically like those previously reported in the chickens—the treponemas being up to 0.5 micron in width and varying to about 7 microns in length. The organisms have closely wound spirals, pointed ends, and exhibit great activity. The spironema type is more loosely coiled, 0.75 to 1 micron in width and up to 10 microns in length, has pointed ends, is flexible, but does not possess the great activity of the treponemas. The fusi-spirochaeta forms previously described in chickens were also observed in all specimens containing spirochetes. The specimens of turkey and guinea-hen caeca showed the latter forms in especially large numbers and in a highly active state.

For a morphological study of spirochetes, such as is at present in progress, there is no difficulty whatever in obtaining suitable material, since these organisms may be obtained from a variety of birds. According to our present knowledge, they appear to be non-pathogenic. Although a detailed report on morphological observations is not completed, it might be mentioned that specimens of warm caecal scrapings mounted on a slide (in Ringer's), with a vaseline-sealed coverslip, and kept in a constant temperature chamber at 36° to 38° C., will still show forms of spirochetes, somewhat active after two months, in addition to the granular and other forms commonly observed.<sup>3</sup>

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### BOOKS RECEIVED

- BRAY, WILLIAM C. and WENDELL M. LATIMER. *A Course in General Chemistry*. Pp. x + 159. Macmillan. \$1.60.  
 CREED, R. S. and others. *Reflex Activity of the Spinal Cord*. Pp. vi + 183. 71 figures. Oxford University Press. \$3.25.  
 SCOTT, WILLIAM B. *An Introduction to Geology*. Vol. I: *Physical Geology*. Pp. xiii + 604. 264 figures. \$3.50. Vol. II: *Historical Geology*. Pp. vii + 485. 124 figures. \$3.00. Macmillan.  
 THOMSON, SIR J. ARTHUR. *Purpose in Evolution*. Pp. 55. Oxford University Press. \$.75.  
 TORREY, RAY E. *General Botany for Colleges*. Pp. xxii + 449. 252 figures. Century. \$3.50.

<sup>8</sup> For some of these families we are indebted to Dr. A. S. Wiener.

<sup>1</sup> *Amer. Jour. Hyg.*, Vol. xii, 3, 537-568, November, 1930.

<sup>2</sup> *SCIENCE*, Vol. lxii, 1863, 275, September 12, 1930.

<sup>3</sup> These studies were begun under a National Research Council Fellowship in Medicine.