A Preliminary Report on the Bacterial Flora of a Sandstone-seepage Pool.

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Our interest was first directed toward the pond which was the subject of this study because, though of small size, it has nearly permanent water, and is a never-failing source of such algae as *Spirogyra, Zygnema, Tribonema* and *Vaucheria*. It, and the small stream draining from it, also support a periodic efflorescence of the so-called iron bacteria. The pond is located five miles north and 1 mile east of Edmond, in Oklahoma County. More precisely, it is in the NW corner of the SE quarter of Section 1, Tn 14 N, R 3 W of the Indian Meridian, Oklahoma County. The usual surface of the pond is about ten square yards, and the depression contains approximately 3,000 gallons of water. It lies in, and is filled by seepage through the common "Permian Red Sandstone" of this region, together with an intermittent inflow of surface water from a shallow ravine. The water has not yet been quantitatively analyzed, but preliminary tests show it to contain much iron and potassium. The pond remains surprisingly constant in volume and mineral constituents the year around, with a microvariant pH of 6.8.

Samples of the fluffy rust-colored bacterial growth found floating in the water in early October, together with organisms later found colonizing on microslides immersed in the pond for seven days, yielded two identifiable species of iron-utilizing bacteria. *Leptothrix ochracea* Kützing was the dominant species, and *Crenothrix polyspora* Cohn was second in abundance. Flat twisted ribbons of iron-stained gum were seen in a few samples, but were so fragmentary that their identification as *Gallionella* species could not be made positively. The study of stalked bacteria developing upon submerged microslides is continuing.

Attempts are being made at the present to cultivate photosynthetic red and brown bacteria, according to the methods of van Niel (3), and also the iron-oxidizing species, using the method of Leathen (2). This work is not completed.

A further study dealt with the heterotrophic bacteria present. Pure cultures were isolated from nutrient agar plates inoculated with the pond water, and nineteen organisms were wholly or partially identified by the aid of Bergey's Manual (1). A list follows:

Bacillus pumilus
Bacillus megatherium
Bacillus subtilis
Bacillus polymyxa
Bacillus cereus var. mycoides
Micrococcus conglomeratus
Micrococcus (ureae?)
Sarcina lutea
Achromobacter delicatulum
Alcaligenes viscosus
Flavobacterium aquatile
Protaminobacter rubrum
Chromobacterium violaceum
Aerobacter aerogenes
Pseudomonas putrefaciens
Streptomyces (erythrochromogen-?)
Corynebacterium spp.

LITERATURE CITED

1. Breed, R. S., et al. 1948. Bergey's manual of determinative bacteriology, Sixth edition. Baltimore: Williams and Wilkins.

2. Leathen, W. W., L. D. McIntyre, and S. A. Braley, Sr. 1951. A medium for the study of bacterial oxidation of ferrous iron. Science *114*: 280.

3. Van Niel, C. B. 1944. The culture, general physiology, morphology, and classification of the non-sulphur purple and brown bacteria. Bact. Rev. *8*: 1-112.