cultured with ferric ammonium citrate (Harder, U.S. Geol. Surv., Profess. Papers 113, 1919; Lewis, Zentr. Bakteriol. Parasitenk. Abt. II **75:** 45, 1928).

The ability of an organism to utilize citrate (pyruvate or serine) is apparently a prerequisite for the appearance of the pigment in the presence of metal ions. It is significant that *S. faecalis* but not *S. faecium* utilizes citrate, pyruvate, and serine as energy sources (Lake, Deibel, and Niven, Bacteriol. Proc., p. 13, 1957; Deibel and Niven, Bacteriol. Proc., p. 164, 1960; Deibel, Ph.D. Thesis, University of Chicago, Chicago, Ill., 1962). However, the role played by these fermentable substrates is not clear. Citrate binds divalent cations, but pyruvate and serine are not noted for significant chelation ability. It can be speculated, however, that the metal ion enters the cell only in the form of its organic complex, and in the cell the organic moiety is utilized and the metal ion precipitated. Although the location of the pigment was not established, its close association with cells was noted by the stability of the complex to washing with water, 0.03 M phosphate buffer (pH 7.0), acetone, chloroform, and ether.

When citrate, pyruvate, or serine is utilized by *S. faecalis*, the pH of the medium does not fall appreciably (pH 6.5 as compared with pH 4.5 when glucose is utilized). At this higher pH value, part of the cations may exist as hydroxides. Both $Mn(OH)_2$ and $Fe(OH)_3$ are brown in the presence of oxygen (Sneed and Maynard, *General Inorganic Chemistry*, Van Nostrand Co., Inc., New York, 1942, p. 1028 and 1072), which may explain why the color was produced only under aerobic conditions and why glucose was inhibitory at concentrations above 0.05%.

Apparently, the pigment observed in the ten *Streptococcus* strains of serological group D is not a true pigmentation. The evidence suggests that the coloration is the result of the precipitation of a metal ion (Mn^{++}, Fe^{+++}, Zn^{++}) when metabolically utilizable substrates (citrate, pyruvate, and serine) are available as energy sources. The production of the colored hydroxide of the metal is dependent upon neutral or alkaline conditions of culture and high oxygen tensions.

ERRATA

MORPHOLOGY OF PLEURONEUMONIA-LIKE ORGANISMS AND BACTERIAL L FORMS GROWN IN LIQUID MEDIA

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Volume 85, no. 2, page 443, col. 1, Fig. 8 to 12, legend, lines 5 to 8 should read: "The cells in all of the photographs on the right and the two lowest photographs on the left were fixed in the liquid medium with formaldehyde; the three upper photographs on the left represent unfixed specimens."

HEMIN BIOSYNTHESIS IN *HAEMOPHILUS*

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Volume 85, no. 4 page 849, col. 1, line 5 should read "hemin or DPN independence"; line 8 should read "provide a clone of hemin- or DPN-"; and line 14 should read "or DPN independence even less."