reconstruction, of which the two branches will be orthopedic and plastic. A medical service and other types of surgery will be provided as necessity arises. After the war it is intended, if possible, to keep the hospital as a permanent American hospital in relation with the Oxford Medical School. It is hoped that a similar British organization may be initiated in relation with a university in the United States.

DISCUSSION

CYTOCHROME B_2

IN the course of isolation of cytochrome *c* reductase from yeast,[1] the presence of a new hemin compound was reported. This observation is of particular interest now because of the report of Bach, Dixon and Keilin[2] of the discovery of a new cytochrome b_2, which, from spectrometric evidence, seems to be identical with the one we have reported. These investigators ascribe two bands to the compound, one at 530 mμ and the other at 557 mμ. The position of the Soret band was not given. The spectrum of an impure sample of cytochrome *c* reductase, both in the oxidized and reduced forms, is given in Fig. 1. In the

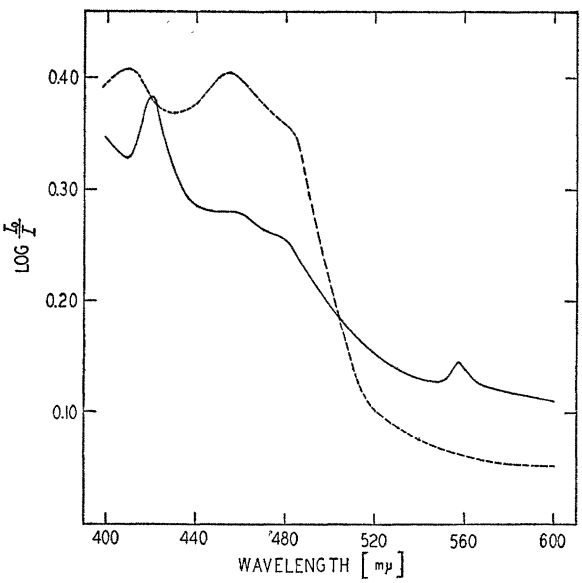

FIG. 1

reduced form the α band of the hemin compound which was present in our preparation was observed at 557 mμ and the Soret band at 420 mμ. Upon oxidation the α band disappears, whereas the Soret band shifts to 410 mμ. The peak at 455 mμ is that of the cytochrome *c* reductase.

This hemin compound is reduced by addition of hexose monophosphate, *Zwischenferment,* and triphosphopyridine nucleotide.

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1 *Jour. Biol. Chem.,* 136: 747, 1940.
2 *Nature,* 149: 21, 1942.

ON THE WIDTH AND ORIGIN OF BACTERIAL FLAGELLA

THE writer was recently examining a photograph of *Aerobacter cloacae* taken with the electron microscope and released by the RCA Manufacturing Company[1] and was struck by its bearing on two controversial points regarding bacterial flagella, namely, the width of a single, unstained flagellum and its origin in the cell.

The thickness of a single, dried, unstained flagellum has been indirectly estimated for a number of bacteria (Migula,[2] Reichert,[3] Meyer[4]). The methods used were based on uncertain and objectionable assumptions. Therefore, one can not help but welcome the heretofore scanty material made available by the electron microscope and hope for more. Accurate measurement of the width of the flagellum of *A. cloacae* were made by drawing a scale, like the one previously used by the writer,[5] on transparent material and by properly superimposing the scale on the photograph of the flagellum. This gave a thickness of 0.02 μ, and an average ratio of 1/22 between the width of the dried flagellum and that of the dried cytoplasm. This ratio is about the same as the one estimated by Migula[2] and is at variance with Meyer's[4] ratio of 1/10. Whether this ratio will hold for other bacteria remains to be seen. Furthermore, by assuming that the faint outer zones of the cells shown in the photograph represent the cell walls, we are justified in assuming that their boundary represents the boundary of the living cells, and that the shrunken cytoplasm has, on the average, about three fourths of its original width (slightly higher than the two thirds found in the literature[6]). On this basis, the width of a single flagellum of *A. cloacae* in the living condition will be about 0.0267 μ or, roughly, 0.03 μ.

Regarding the origin of the flagellum, we have those who believe that it originates from the cell wall and those who believe that it originates in the cytoplasm and extends through pores in the cell wall. The literature has been reviewed by the writer.[6] In the above-

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2 W. Migula, "System der Bakterien," 1, 96–138, Jena, 1897.
3 K. Reichert, *Centralbl. f. Bakt..* I, Orig., 51: 14–94, 1909.
4 A. Meyer, "Die Zelle der Bakterien," 119–120, Jena, 1912.
5 G. Knaysi, *Jour. Inf. Dis.,* 45: 13–33, 1929.
6 G. Knaysi, *Bot. Rev.,* 4: 86–87 and 99, 1938.