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

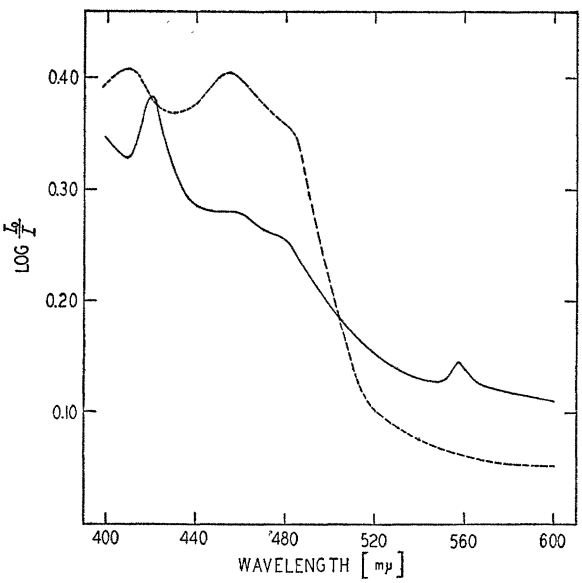

FIG. 1

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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FEB. 17, 1942

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-

1 Wallerstein Laboratories Communications, 4: 3, 1941.
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.

mentioned photograph of *A. cloacae,* there is one cell that clearly shows penetration of the faint, outer zone by the flagella all the way to the shrunken mass of the cytoplasm. If this outer zone is the cell wall, and the writer has reasons to believe that it is, then the electron microscope has been instrumental in settling another controversial point regarding bacterial flagella.

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FLUOROCHEMISTRY

WITH the increasing number of researches and publications devoted to the applications of fluorescence to chemistry, a need is rapidly arising to identify this new branch of science as distinct and apart from related and often confused fields.

Therefore, it seems expedient to propose the name *fluorochemistry* as descriptive of this branch of science. The term fluorochemistry is in order with other terms created to identify highly specialized fields which are still within the boundaries of chemistry and/or physics, *e.g.,* photochemistry, physical optics, and so on.

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SINO-AMERICAN SCIENTIFIC FRIENDSHIP

IN the January 3, 1942, issue of *Nature* there appeared a communication from the British Association of Scientific Workers to American men of science, calling attention to the numerous bonds between them and pointing out the necessity for further cooperation between them and, particularly, their Soviet colleagues in order to achieve the goal of "preserving the scientific heritage of the whole world against the barbarism and obscurantism of Fascist ideology." While the sentiments of this message are undoubtedly welcomed and shared by all American scientists and will strengthen our mutual friendship, we think it of the greatest importance to include and reemphasize at this time our continued feeling of solidarity with the scientific and technical workers of China who have given the world such a magnificent example in contributing to the effort of resistance against brutal aggression.

It has been the good fortune of this country that numerous Chinese have come to study with us and that close ties unite many of the educational institutions of China with our own. We have long admired for their qualities of high character, vigorous personality and intellectual ability the Chinese who have been our fellow classmates, students or professional colleagues. Working with them in our institutions here or in those of China we have realized that there is mutual understanding and that their contribution to civilization continues in an undiminished stream. Our esteem has grown even greater during the past years as we have witnessed the courage with which, in the invaded cities under scrutiny of the enemy or under more adverse physical conditions in the free cities which they have reached often only after long and perilous travel, they have persevered to increase the common store of knowledge as well as to aid in the resurgence of their nation.

We are certain that the scientific workers of Great Britain and Russia join wholeheartedly with us in expressing again to our Chinese colleagues the feeling of comradeship which for many years has motivated our relations and will in the future aid us to create a world where all men may work for the common good, free of threats to security and happiness.

MORRIS F. SHAFFER

QUOTATIONS

THE WORK OF THE ROCKEFELLER FOUNDATION IN 1941[1]

DURING 1941 the appropriations of the Rockefeller Foundation amounted to $9,313,964. The income of the foundation from investments during the year was $8,734,992. This income was supplemented by a transfer of $600,000 from the principal fund.

The appropriations were distributed for the most part in six major fields, roughly as follows:

Public health	$2,450,000
Medical sciences	2,120,000
Natural sciences	1,271,000
Social sciences	1,227,000
Humanities	1,020,000
Program in China	154,000

A detailed statement of the appropriations made in 1941 appears at the conclusion of this report. Of the money spent during the year, 74 per cent. was for work in the United States and 26 per cent. for work in other countries.

The war, of course, has radically affected the activities of the foundation abroad. In June, 1940, the foundation's Paris office was closed, and the Lisbon office was closed in July, 1941. There are now no foundation representatives on the continent of Europe, but an office is being maintained in London. Late in 1940 the Far Eastern office of the foundation

[1] Opening pages of the annual report of Dr. Raymond B. Fosdick, president of the Rockefeller Foundation.