SCIENTIFIC BOOKS

MEDICINE

A Hundred Years of Medicine. By C. D. HAAGENSEN and W. E. B. LLOYD. Pp. xii + 444. 42 illustrations. New York: Sheridan House, Inc., 1943. $3.75.

ANY good book has a personality which in turn implies a pleasant inheritance and a good upbringing. This particular book certainly has a substantial family tree and a sound educational background, for it represents an alliance between the two Cambridges—Cambridge, England, and Cambridge, Massachusetts. One of its authors, Dr. Haagensen, graduated from the Harvard Medical School, and the other, Dr. Lloyd, received his bachelor's and master's degree from the older university.

In 1936, Dr. Lloyd was induced to write a book called "A Hundred Years of Medicine." At that particular time the publishing house of Duckworth in London was putting out what it called the "Hundred Years Series." The books in this series dealt with such varied topics as psychology, transport, anthropology and government, and also included medicine. One gathers that their purpose was to describe for British readers a century of progress in several different fields.

Dr. Lloyd's book was 344 pages long, was unillustrated and sold for fifteen shillings. It must have created a favorable impression in England and have been well received by the medical profession there, since both the *Lancet* (135–136, July 18, 1936) and the *British Medical Journal* (392, August 22, 1936) at once spoke highly of it. Each of these critics emphasized that the book told the story of a century's history of medicine accurately and entertainingly and was certainly the kind of a volume that any one who cared for reading would enjoy.

Certain copies of it reached this country; apparently, however, not many medical men saw them. The book was not reviewed in such periodicals as the *Journal* of the American Medical Association, the *Archives of Internal Medicine* or other journals which are in the habit of reviewing medical books, and no copies of it are to be found in such representative literary lodging houses as the Boston Medical Library and Harvard University; yet certain physicians became acquainted with it because the New York Academy of Medicine owns a copy and there must be at least one copy in Philadelphia, since it was reviewed in the *American Journal of Medical Sciences* (194: 276, August, 1937).

On the whole, the American reception of Dr. Lloyd's book was anything but cordial. I have been unable to find any reviews of it by non-medical writers, and our doctors were equally indifferent. E. K. of the *American Journal of Medical Sciences* said that any one who digested it would be well informed on the progress of medicine in the past century; but in general too few doctors made its acquaintance to allow it to win the reputation it deserved.

As one rereads it, the first edition was a pleasant affair. It began with a quotation from Burton in "The Anatomy of Melancholy" and surely no more graceful introduction to a volume on the history of medicine is possible than his words: "How many excellent physicians have written just volumes and elaborate tracts of this subject? No news here: that which I have is stoln from others; *dicitque mihi mea pagina, fur es.* If that severe doom of Synesius be true, *it is a greater offence to steal* dead mens labours, than their cloaths, what shall become of most writers? I hold up my hand at the bar amongst others, and am guilty of felony in this kind." The book went on from this beginning to give an instructive and lively account of what has happened in the field of medicine from 1832 until 1934. The style was pleasing, the material that was used was diverse, and the manner in which it was presented was delightful. There was a timetable of events of medical importance at the end—in itself a useful compilation for any one to be able to lay hands on. On the whole, it is easy to see why our British colleagues spoke so favorably of the book and still difficult to understand why so few people on our side of the Atlantic accepted it.

The new edition which has just appeared includes the contents of the first edition brought up to date and also a good deal of extra material. It is now a collaborative enterprise and its two authors have dovetailed together each other's views so as to make an appetizing mixture of the whole for readers on either side of the Atlantic. When all is said and done, the last century was a fertile period for medicine; the chief difficulty for the authors was to decide what to leave out.

There are certain obvious gaps in the book which individual critics may seize upon. For example, the medical adventures of Alexis St. Martin were omitted, an oversight which the *Rhode Island Medical Journal* (26: 313, December, 1943) objected to, and the valuable timetable of significant medical events of the past century has been deleted. The majority of physicians who see it, however, will agree that here is a readable book worth reading and recommendable to their colleagues, friends and students.

It is nicely printed, well indexed, the illustrations which are scattered through the text are interesting,

the bibliographic references that accompany each chapter are well chosen, and the story is fascinating of how many advances in different and apparently unrelated fields of medicine have been correlated to advance knowledge. The final chapter gives a fair and impartial account of the current trend towards the socialization of medicine.

The second edition of "A Hundred Years of Medicine" bids fair to achieve the general popularity it deserves. After a seven-years' sleep, and in a new dress, at last the book will come into its own.

REGINALD FITZ

CALCULUS

Calculus. By LYMAN M. KELLS. Prentice-Hall. $3.75.

PROFESSOR KELLS'S attractive new book can be warmly recommended as an introduction to the calculus. He has given real life to the fundamental abstract ideas, by well-chosen and often original verbal and pictorial illustrations (there are 325 figures). In the same spirit, he has driven home the practical value of the calculus as a method by an immense variety of concrete problems. The result should be to embed the calculus permanently in the thinking processes of even mediocre students, and the reviewer intends to try the text in his own first-year courses.

On the other hand, he does not feel that Professor Kells's book will develop sufficiently the critical ability of more advanced students. No warning is given that one may be led into error by believing the "obvious," and no apology is made for introducing convenient "assumptions" in order to minimize the difficulties of proof. In fact, the "proof" at the top of page 409 is grossly wrong; so is the "assumption" at the beginning of §174; the function $\exp(-1/x^2)$ being a well-known counter example which appears in most rigorous texts. When such errors are corrected in later editions together with numerous misprints, the book should be admirably suited to first-year students.

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SPECIAL ARTICLES

THE RED AND GREEN LIGHTS OF THE "RAILROAD WORM"

A FEW luminous animals are known which emit light of two different colors. One of the most striking of these is the South American railroad worm or "ferrocarril," of the genus, Phryxothrix, a beetle of the family Phengodidae, related to fireflies. The adult male has typical beetle characteristics and long branched antennae. The adult female, nearly two inches long, is larviform, with eleven pairs of brilliant greenish yellow luminescent spots on the sides of the body and a red luminous area in the head. The larvae of both male and female also possess similar luminescent spots. In North America, the rare closely related insect, Phengodes, occurs, with rows of green lights, but lacking the red light in the head.[1]

Thanks to the kindness of Dr. H. L. Parker, of the U. S. Department of Agriculture, I have recently received from Uruguay several living specimens of Phryxothrix in excellent condition. One was an adult female and the others probably larvae. They showed no light when at rest but if disturbed very slightly, by knocking the table gently or blowing air over them, they responded by shining the red light. When the disturbance was greater the rows of greenish lights also appeared and the animal explored its environment with a brilliant display of pyrotechnics. The red light in the head resembled the tip of a glowing cigarette. Sometimes all and sometimes only certain of the greenish lights would be turned on. Later the greenish lights went out while the red remained on for some time, finally to disappear as the animal became quiet again.

With these specimens it has been possible to determine the nature of the red luminescence. There are three ways in which a red light might be produced: (1) By emission of red wave-lengths, a red chemiluminescence; (2) by the presence of a red color screen transmitting red but absorbing other wave-lengths; (3) by red fluorescence of a compound, excited by shorter wave-lengths emitted by some chemiluminescent reaction. The first method is the one used in producing the red light, as indicated by the following experiments.

If the red luminescent material is dissected out of the head of Phryxothrix and examined on a slide in day-light, no red pigment can be detected.[2] The tissue appears colorless and the easily visible (in the dark) red luminescence could not be due to a red color screen or to absorption by the chitin of the head, which is a light brown in color.

When hydrogen or nitrogen gas is passed over the excised red luminescent tissue in the dark, the red light disappears, and if the potentially luminous substance is now exposed to near ultra-violet light without the visible (from a mercury arc filtered through Wood's

[1] See the description in "Living Light," by E. N. Harvey, Princeton University Press, 1940, p. 69.

[2] A very weak solution of some red compound might be present, too dilute to appear red by absorption but concentrated enough to luminesce with a red emission. The luminescence of colored compounds can be detected in concentrations too weak to appear colored.