also an adaptation to the different and more active movements made by the cod in feeding.

C. JUDSON HERRICK,
Secretary

(To be continued)

SCIENTIFIC BOOKS

Second Report of the Wellcome Research Laboratories at the Gordon Memorial College, Khartoum. ANDREW BALFOUR, M.D., etc., Director. Department of Education, Sudan Government, Khartoum 1906. Royal 8vo. 255 pp., 21 plates, 106 figures.

The functions of the Wellcome Research Laboratories founded by private munificence are thus expressed in the language of the foundation:

(*a*) To promote technical education; (*b*) to promote the study, bacteriologically and physiologically, of tropical disorders, especially the infective diseases of both man and beast peculiar to the Sudan, and to render assistance to the officers of health, and to the clinics of the civil and military hospitals; (*c*) to aid experimental investigations in poisoning cases by the detection and experimental determination of toxic agents, particularly the obscure potent substances employed by the natives; (*d*) to carry out such chemical and bacteriological tests in connection with water, food stuffs, and health and sanitary matters as may be found desirable; (*e*) to promote the study of disorders and pests which attack food and textile producing and other economic plant life in the Sudan; (*f*) to undertake the testing and assaying of agricultural, mineral, and other substances of practical interest in the industrial development of the Sudan.

The first report of these laboratories covered the history of its work up to January, 1904; the second, now before us, brings the record down to the early part of 1906. The director, Dr. Andrew Balfour, assisted by a staff of five or six scientists, has achieved a piece of work that from every standpoint deserves the highest praise. The difficulties of scientific work in a region so far removed from supplies and necessities, to say nothing of conveniences, one where "native helpers have proved to be only broken reeds," "not to be trusted beyond the bottle washing stage," can not easily be over-estimated. Despite this the field covered both in territory and in topics investigated, is so broad and the results presented in the report so extensive, that only the most important can be noted here.

F. V. Theobald, the consulting entomologist, has written a fine chapter on the mosquitoes, as well as others on human, animal and vegetal pests. E. E. Austen, of the British Museum, London, has contributed also a valuable chapter on blood-sucking diptera from the Anglo-Egyptian Sudan.

The work reported by the director himself is full of interest. It begins with a record of mosquito work in Khartoum and the Anglo-Egyptian Sudan. By the persistent work of the mosquito brigade anophelines have been practically abolished and the town kept in a fairly satisfactory condition, one vastly different from that which used to obtain. "At Khartoum the subject is complicated by the presence of mosquito-carrying steamers, boats and barges. Were it not for these, success would have crowned the efforts at extinction." For about $350 in 1905 Khartoum was kept free from malaria, and to a very large extent also from the annoyance which usually adds so much to the discomforts of life in the tropics; a trivial expense for such immunity.

Of other biting insects the distribution of *Glossina morsitans,* the carrier of trypanosomiasis in animals has been found to be somewhat general in the southern Sudan, and *G. palpalis,* the vector of the human trypanosome, has been positively identified from the extreme southern limits of the country. Valuable data are given on the habits of other biting insects, including the Congo floor maggot, and the true jigger, or Chigoe, not heretofore reported from the Sudan. Some records of ticks and an extended discussion of *Aphis sorghi* and of locust swarms, and their destructive work as well as of their parasites, are worthy of note.

A hæmogregarine from the jerboa, or desert rat, which was the first to be found in mammals, is described in detail and well illustrated. It is similar to one since reported by Captain Christophers in India. The free motile stage was observed only three times, but

cysts and the merozoites were regularly found in the liver and kidney. Interesting forms from the jerboa flea which were at first regarded as developmental stages of this hæmogregarine were found on further investigation to be in reality parasites of the flea itself. Other forms from small mites (*Dermanyssus*) which infest the jerboa may prove to be the developmental stages sought. Another very interesting series of observations concerns a leucocytozoon of mammals, obtained from the blood of a Norway rat, although it could not be found in numerous examinations of the blood from many Egyptian rats.

Trypanosomiasis in the Anglo-Egyptian Sudan received careful attention. In the region south of the tenth parallel of latitude it certainly exists to a very considerable extent, affecting donkeys, horses, mules and possibly camels. This is not the species, *Trypanosoma nanum,* found in cattle. Of the latter disease the report discusses at length its symptoms and post mortem findings, as well as its morphology and inoculation experiments. Similar though more extended records are given for an undetermined species from mules which is probably identical with *T. dimorphum.*

One very interesting chapter embraces the report of the traveling pathologist and naturalist, Sheffield Neave, who spent four months in the field in southern Sudan. His chief effort was to locate the natural source of infection with the tropical blood parasites. In all he made 750 blood films, from 55 human subjects, 118 other mammals, 69 birds, 33 fish, 6 amphibia, and 18 sheep ticks. Trypanosomes were found in man, the mule, four fish, and two birds. Filariæ were found in five birds, *Halteridium* in eight, and a new *Hæmamœba* in one. All of these forms are described in detail. Many insects and a few plants were collected on the trip, and numerous data recorded regarding the tribes with which he came in contact.

The chemist of the Wellcome Research Laboratories gives a valuable chapter on a multitude of subjects from the chemical composition of Nile waters to the use of asbestos in ancient burial, and new forms of chemical apparatus. It would be impossible even to cite all, but the extended study of gum arabic, its varieties, occurrence, uses, grading, determination of viscosity, etc., and the careful examinations of Nile waters are investigations of fundamental importance.

The work is well printed and splendidly illustrated. One hundred and six fine text figures and twenty-one full-page superb colored plates add greatly to the scientific value of the report.

Such rich results reflect great credit upon the director and his staff and furnish a most ample justification of the generosity and foresight of the founder. Institutions more favorably outfitted and conveniently located may well be jealous of their laurels when such reports as this appear.

Henry B. Ward
Zoological Department,
University of Nebraska

A 1671 English version of Nicolaus Steno's De solido intra solidum naturaliter contento, by H. O.

The recent reprinting of Steno's classic 'Prodromus' in Germany has revived the interest in this seventeenth century anatomist and geologist and in the few scarce editions of his remarkable treatise. His famous tract which appeared in Latin at Florence in 1669 was, according to Professor von Zittel, reprinted in Leyden in 1679 and a French translation was brought out by Elié de Beaumont in 1832, but neither von Zittel nor the booklists to which I have had access make mention of an English translation of the book. Just recently there fell into my hands an evidently little known English version printed in London in 1671, with the following title-page:

The | Prodromus | to a | Dissertation | Concerning | Solids Naturally Con- | tained within Solids. | Laying a Foundation for the Ren- | dering a Rational Accompt both of | the *Frame* and the Several *Changes* of | the Masse of the Earth, as also | of the various *Productions* in the same. | By Nicolaus Steno. | English'd by H. O. | London, | Printed by *F. Winter,* and are [*sic*] to be Sold | by *Moses Pitt* at the *White-Hart* in | *Little Brittain,* 1671.