Journal of Parasitology for June, 1925. This protozoon has been found in tadpoles of *Rana catesbiana* and *R. clamata* in New Jersey and in those of *R. pipiens* in Iowa.

Endolimax ranarum is a smaller amoeba than *Endamoeba ranarum*, and is much less frequently encountered. Its nucleus is more or less typical of that of other members of the genus and careful staining is required to bring it out.

On the basis of the combined experiences of Dr. Hegner and those of the writer, we may confidently expect to find in our American tadpoles most of the following species of intestinal protozoa: (1) *Opalina ranarum*, (2) *Nyctotherus cordiformis*, (3) *Balantidium entozoon* (not observed by either Hegner or the writer), (4) *Giardi agilis*, (5) *Trichomonas augusta*, (6) *Chilomastix caulleryi*, (7) *Hexamitus intestinalis*, (8) *Euglenamorpha hegneri*, (9) *Mastigina hylae*, (10) *Endamoeba ranarum*, and (11) *Endolimax ranarum*. *Trichomonas batrachorum* and *Polymastix bufonis* are two other species which have been found in frogs and should be searched for in tadpoles. This formidable list of intestinal protozoa makes tadpoles invaluable for teachers in protozoology and invertebrate zoology.

The writer wishes also to call the attention of bacteriologists and microbiologists to a rather unusual bacterial flora which is sometimes encountered in the rectum of the tadpole. Large spirilla with a prominent spore at each end, bacilli of a crescentic shape with a prominent spore at each end, and other equally remarkable forms have been seen by the writer while making examinations of the contents of the rectum of tadpoles.

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THE EFFECT OF ULTRAVIOLET RADIATIONS UPON SOY BEANS

A SERIES of experiments was performed to study the effect of ultraviolet radiations upon the subsequent development of the soy bean. The full spectrum of an air-cooled quartz mercury lamp was used in every case. The plants were kept under rigidly controlled conditions.

The first outstanding result noted was that the longer the exposure the shorter the plant, that is, in successive experiments as the length of exposure was increased the internodes of the plant became shorter. The stems were very brittle and the leaf tissue very stiff and rigid.

The internal changes were equally interesting. The stems of irradiated plants were approximately one and one half times as large in diameter as the control plants. There was also a reduction of the number of medullary rays in irradiated plants, so that these plants tend to show that the meristematic tissues remain active for a very much longer period of time than in the control plants. The cells of the medullary rays under ordinary conditions remain parenchymatous but in irradiated plants have gone further and developed into xylem and phloem. Furthermore, because of differential growth the stems became hollow.

A detailed report of the work will be prepared later. The author wishes to express her appreciation to Dr. W. J. G. Land and Dr. C. A. Shull for their kind help and inspiration.

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FLORA OF BARRO COLORADO ISLAND, CANAL ZONE

RECENTLY there appeared in SCIENCE an account of Barro Colorado Island.[1] Visiting scientists working upon plants are concerned with the names of the species to be found on the island. All such workers will be interested in a list of plants of Barro Colorado Island that has just been issued by the Smithsonian Institution. The author, Mr. Paul C. Standley,[2] who spent a week on the island, has traveled extensively in Central America and has published several articles on the flora of these regions. The flora is an annotated list without keys or complete descriptions, but the accompanying notes on common names, uses and prominent characters will be a great aid to those taking advantage of the facilities of the laboratory on the island.

Mr. Standley has also published a paper on the ferns of the island.[3] A flora of the Canal Zone by the same author is now in press.

The bibliography of papers relating to Barro Colorado Island now includes over 50 titles.

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A DAYLIGHT METEOR

AT a golf course on Warwick Neck, near Providence, Rhode Island, I was on a fairway overlooking Narragansett Bay about one o'clock in the afternoon of June 1, in brilliant sunlight when my companion and I distinctly saw what seemed to be a small meteorite dropping over the bay. It was fol-

[1] Kellogg, Vernon, "Barro Colorado Island Biological Station," SCIENCE 65: 535, 1927.

[2] Standley, Paul C., "The Flora of Barro Colorado Island, Panama," Smithsonian Miscellaneous Collections 78: No. 8, 1–32, 1927.

[3] Standley, Paul C., "The Ferns of Barro Colorado Island," *American Fern Journal* 16: 112–120, 1926; 17: 1–8, 1927.

lowed by a train of sparks much like a spent rocket, but originated too high to have been one. From our position we could not see if it reached the water. While it seemed to be only two or three miles away, I realized that such appearances are deceptive. There was no sound accompanying the fall audible from where we stood.

WILLIAM L. BRYANT

PARK MUSEUM

QUOTATIONS

THE NATIONAL MUSEUM OF AUSTRALIAN ZOOLOGY

IN 1924 the Federal Parliament of Australia, knowing the fact that the unique native fauna of the commonwealth was fast disappearing, and recognizing its importance to medical science, founded the National Museum of Australian Zoology. It was a wise and statesmanlike act, the full effect of which is only now beginning to be seen. Dr. Colin Mackenzie was appointed director, with the title of professor of comparative anatomy. It was a museum with a difference. In the previous year Professor Mackenzie had presented to the commonwealth his specimens of living native animals, together with the buildings and fencing on the Research Reservation at Healesville. He had given also his collection of macroscopic and microscopic specimens, numbering many thousands; and these now form the basis of the museum collection. Each specimen has a direct application to some medical or surgical problem. Nothing quite like the collection of normal histological preparations from reptiles, monotremes and marsupials, with which human or other mammalian tissue can be compared, exists anywhere in the world, and we are glad to know that illustrated atlases describing the collection are being prepared for publication—a huge enterprise which has been begun not a day too soon. Early in 1923, when commenting on the announcement that the commonwealth government had passed an act to establish a Museum of Australian Zoology, we observed that there was clearly an obligation on Australia to preserve a full series of specimens, since the whole indigenous fauna of Australia seemed only too likely to follow Tasmanian man to extinction. The commonwealth legislature has now gone rather further than we hoped, for it has not only allotted a site for the National Museum of Australian Zoology at Canberra, the new capital of Australia, but the Federal Capital Commission has provided a site for a zoological park or reservation, in which will be kept living specimens of Australian and Tasmanian native animals in their natural state. The area of the site for the museum, laboratories and lecture theater is about five and a half acres, in a magnificent situation on Action Hill, facing Parliament House. The research reservation or zoological park, containing about eighty acres, is on a peninsula bounded on two sides by the river Molonglo. The report of the Parliamentary Standing Committee on Public Works, dealing with the construction of buildings, has now been published, authorizing for this purpose a sum approximating £100,000. The report has received the unanimous approval of the Federal Parliament, and the buildings, representing what is really the first stage in the establishment of the National University of Australia, will be begun immediately. When the buildings are completed every facility will be offered to workers—not only Australian, but also from other countries—wishing to study comparative anatomy and its application to modern medical and surgical practice. The museum is now at Melbourne, but is to be moved to Canberra next year. To its original contents many important additions have recently been made, including the collection of specimens valued at £25,000 belonging to Dr. George Horne, of Melbourne, dealing with the Stone Age men of Australia, and also a collection of aboriginal skulls made by Dr. Arthur Nankivell, of Kerang. The museum also possesses the Froggatt entomological collection, and that of Mr. Murray Black dealing with the aborigines of South-East Victoria. The completely fossilized prehistoric Cohuna skull, together with many other specimens of anthropological value, belong to the museum. The federal government of Australia is to be congratulated on its decision to establish a center for the advancement of comparative anatomy, which admittedly is the foundation of all the medical sciences. We may venture to express the hope that the lead now given by Professor Colin Mackenzie will encourage wealthy Australians to display a similar national spirit, and by liberal endowments help on the necessary research work in the interests of humanity.—*The British Medical Journal.*

SCIENTIFIC BOOKS

The Internal Constitution of the Stars. By A. S. EDDINGTON, M.A., F.R.S., Cambridge; at the University Press, 1926. 407 pp., 5 figures.

THE fundamental problem in astrophysics may be regarded as the construction of models which, obeying the well-established laws of theoretical physics, describe the observed intrinsic properties of the stars. Thus there are stellar models which describe the formation of the observed spectra in reversing layer and chromosphere, models which describe the formation of binary stars by fission and the behavior of cepheid