the building call for a three-story brick and limestone structure, 40 by 180 feet. In addition to this special appropriation, the legislature will be asked to increase the regular state biennial appropriation from $150,000 to about $225,000, to help meet increased costs.

Dr. Henry Cuthbert Bazett has been appointed professor of physiology in the Medical School of the University of Pennsylvania to succeed Dr. Henry T. Reichert, who retired last year. Dr. Bazett is the Cheselden Welsh lecturer of clinical physiology at Oxford, England, and has been connected with St. Thomas' Medical School.

Dr. S. A. Mahood, who has been in charge of investigations on wood cellulose and essential oils at the U. S. Forest Products Laboratory, Madison, Wis., for the past three years, has become associate professor in charge of organic chemistry at Tulane University.

Dr. Kenneth D. Blackfan, associate professor of pediatrics at the Johns Hopkins Medical School, has been appointed to the professorship of pediatrics at the Medical College of the University of Cincinnati.

DISCUSSION AND CORRESPONDENCE

LEUCOCHLORIDIUM IN AMERICA

Since I published the description of *Leucochloridium problematicum*,[1] Dr. H. A. Pilsbry has very kindly called by attention to three articles which deal with members of this genus. All of these are works on conchology and are merely incidental to descriptions of certain snails, yet they are interesting since they show that collectors of mussels were more or less familiar with the parasite before parasitologists had studied it in America.

The first article is that of Dall,[2] who writes:

A singular sausage-shaped parasite, of which one end is attenuated into a slender tube, is found in *Succinea*. The soft parts of the snail thus affected are much distorted. The parasite is one phase of a Distome or fluke-worm, and is of a dark brown color and over an inch in length. It is known as *Leucochloridium americanum* Dall. An analogous species has been described from French Succineas, which is of a mottled green. This parasite attains its development in the intestines of thrushes which feed on Succinea, and may perhaps be fatal to these birds.

Bryant Walker[3] refers to a *Leucochloridium* species as follows:

S. ovalis Gld. Abundant everywhere. This species is occasionally infested by a species of Leuchchloridium similar to the *L. paradoxum* Carus, found in the *S. putris L.* of Europe and figured by Baudon in *Jour. de Conch.*, V., 27, Pl. X., Fig. 6. In the same journal (V. 28, p. 205) is published a note from the late Thomas Bland, recording a similar occurrence in a specimen of *S. obliqua* Say.

Finally Hanham[4] states:

Succinea obliqua Say (St. Charles River). . . . In cleaning some of these shells taken on November 8, 1891, a few of the finest living specimens contained peculiar parasite, reference to which is made by Dr. Dall in his useful pamphlet "Instructions for Collecting Mollusks, etc.," (*Leucochloridium*).

Since Dall gave the specimen a name some consideration of it is necessary. It is of course impossible to identify the worm since he did not describe it. The sporocyst was evidently more than one inch in length. The only other descriptive statement is that it "is of a dark brown color." If one is to construe this expression to mean that the sporocyst is solid brown, it is certainly not *Leucochloridium problematicum* Magath. From the text it seems to me one can not assume anything else.

It is interesting to note that all early references to the finding of the parasite in Amer-

[1] Magath, T. B., "*Leucochloridum problematicum* N. sp.," *Jour. Parasit.*, 1920, VI., 105–115.

[2] Dall, W. H., "Instructions for Collecting Mollusks and Other Useful Hints for the Conchologist," U. S. National Museum, Bull. 39, Part G, 1892, p. 10.

[3] Walker, B., "The Shell-bearing Mollusca of Michigan," *Nautilus*, 1892, VI., 18.

species as follows:

[4] Hanham, A. W., "Notes on the Land Shells of Quebec City and District," *Nautilus*, 1897, X., 102.

ica have been made by conchologists. This perhaps explains the lack of morphologic description of the parasite from America prior to 1920 since it was only of passing interest to snail collectors. It would be splendid if men who have the opportunity to collect certain groups of animals would save and turn over the parasites and symbiotic animals to those interested in these particular fields, and certainly we would work out life cycles much faster if this attitude were taken by professional collectors.

THOMAS BYRD MAGATH

MAYO CLINIC,
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SOME SIMPLE GENERATORS OF HIGH FREQUENCY OSCILLATIONS

TO THE EDITOR OF SCIENCE: In SCIENCE for October 15 is printed a letter from Mr. G. M. J. Mackay concerning the utility of helium as a convenient source for the production of high frequency oscillations. In this connection it may be of interest to call attention to some other simple forms of generators.

About fourteen years ago the writer was engaged to conduct some experiments for the late Professor Kristian Birkeland, of the Christiania University who, from observations made on his electric furnaces for the fixation of nitrogen, was led to believe that the arc, as therein used, was partly of an oscillatory nature. Birkeland's idea was to produce high frequency oscillations without the use of hydrogen, by simply keeping the arc in motion by means of a magnetic field, with a view to utilizing the oscillations for wireless telephony.

His idea also proved correct, as high frequency oscillations could easily be produced between two circular, water-cooled copper electrodes in a radial magnetic field. Telephonic messages were also transmitted by these means from the university buildings to Bygdoe, a distance of about two miles; but the hissing noises due to the arc made understanding very difficult.

In the device used, the electrodes were arranged horizontally, the upper electrode resting by its weight against the lower one. On switching on the current, the upper electrode was lifted a fixed distance by an electromagnet carrying the main current. This arrangement served to start the arc automatically whenever it went out, a thing that did not happen very often, however, when the apparatus and current were properly adjusted, the arc sometimes burning for hours without interruption. While the available voltage was 220, the voltage between the electrodes was comparatively low, to the best of my recollection about 50.

The energy of the oscillations was sufficient to permit a continuous spark of more than 1 cm. length to be drawn from the secondary circuit, easily melting the point of a thick iron wire. Moreover, it was found possible to increase this energy considerably by working up to three arcs in series on the above voltage. As a latter arrangement did not adversely affect the stability of the arc there seems to be no limit to the amount of energy that may thus be converted into a high frequency current.

An interesting phenomenon was discovered while working this type of a generator: While the oscillatory arc made the impression of a rotating cluster of fat, white sparks, producing a crackling sound, it would, when the current was properly reduced, completely change its character. The fat, white sparks would gradually disappear, giving way to a pale blue, almost noiseless arc, consuming only a fraction of the initial current. When this condition had been attained no current would flow through the primary oscillation circuit which could be detached without any effect on the arc. The latter was also fairly stable, but at a sufficient reduction of the current, or weakening of the magnetic field, it would go out with a sharp click. This arc strikingly resembled the glow obtained by discharges through moderately rarefied air.

In the course of the experiments, other surrounding media than air were tried, among them water. One day it was found that in using the latter medium it was not necessary