the tension in the ring of $P_7N_7O_{14}H_{14}$ is too great to permit of its existence and it spontaneously takes up water, forming $P_7N_7O_{15}H_{16}$. A further confirmation is found in the fact that the higher members on decomposition in part close again to form the stable ring-acid $P_4N_4O_8H_8$, indicating a disposition to form rings containing P_4N_4. An attempt to test this theory further will be made by endeavoring to prepare diphosphonitrilic chlorid, $P_2N_2Cl_4$. The corresponding meta-phosphimic acid, $P_2N_2O_4H_4$, should have the angle 90°, differing from the angle of least tension, 135°, by 45°. Such an acid should be much less stable than even $P_7N_7O_{14}H_{14}$ and should pass at once into $P_2N_2O_5H_6$.

WILLIAM H. KRUG,
Secretary.

ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, MAY 17.

MR. C. S. BOYER illustrated the structure and geographical distribution of diatoms by a large series of lantern views preparatory to describing the following new species: *Rhabdonema Woolmanianum*, *Biddulphia semicircularis Asburyana*, *B. argus*, *B. interrupta*, *B. keeleyi*, *B. Shulzei* and *B. verrucosa*. The paper, with figures, will be published in the *Proccedings* of the Academy.

MR. T. C. PALMER described and illustrated some of the phenomena of conjugation in *Closterium*. The essential steps are essentially as in *Spirogyra*, in that in both cases the process is at first a putting out of tubes which meet and fuse. But just as *Closterium* differs from *Spirogyra* in its method of cell-division, so it presents peculiarities in manner of formation of the zygospore. The two lobes of the desmid seem to possess a certain degree of individuality, at least at the period of conjugation. These lobes, owing to the peculiar method of growth of the plant, generally differ, at the time of conjugation, in age, and therefore in size, and in the thickness, color and markings of the cell-walls. The contrast between two ends or lobes of a given cell is often very great; and in *C. acerosum*, as a rule, each desmid first separates into two entirely distinct and independent semi-cells, each of which is beautifully rounded off at its blunt end by a new growth of cell-wall. The young semi-cell of each desmid then conjugates with the old semi-cell of the other, and two perfectly distinct zygospores are thus formed. These zygospores and the empty semi-cell cases are held together by a nearly or quite invisible jelly. The 'individuality of the semi-cell,' a tendency toward which has been remarked upon heretofore by Mr. Archer in the case of *C. lineatum*, here becomes practically complete.

In one instance *C. acerosum* formed three zygospores instead of two. One of these was the usual size, made up of the commingled contents of an old and new semi-cell. The other two were about half the size, and consisted each of the unmixed contents of another semi-cell. Of a similar nature is the recently observed discharge, without conjugation, of the contents of a whole cell in *C. lineatum*. The protoplasm, containing small round or ovoid bodies like those in the ordinary zygospore, issued from the ruptured union of the semi-cell cases. It assumed a spherical form. Its development could not be followed further.

The development of the zygospores of *Closterium* is not thoroughly well understood, but the phenomena are probably similar to those of the germination of *Cosmarium*. In addition, however, to this process, another method of reproduction is suspected in *Closterium*, of which the discharge of the cell-contents without conjugation may be one of the stages.

Many of the phases of reproduction in the desmids may be observed to advantage by placing zygospores in life-slides and following the changes that ensue. In such slides large numbers of very minute *Closterium* frequently appear, and these grow perceptibly from day to day, but it is not certain, or even probable, that these arise from the ordinary zygospore.

The following papers were presented for publication in the *Proceedings:*

'Descriptions of five new Phyllostome Bats,' by Gerrit S. Miller, Jr.

'Chitons collected by Dr. Harold Heath at Pacific Grove, near Monterey, Cal.,' by H. A. Pilsbry.

EDWARD J. NOLAN,
Recording Secretary.

Erratum: In the review of Wilder's System of Nomenclature, p. 716, col. 1, line 5, for 'chippocamp' read 'hippocamp.'