

November 2. "Plants as insect traps," by Dr. J. H. Barnhart.

### UNIVERSITY AND EDUCATIONAL NEWS

A BEQUEST of \$5,000 was made to Cornell University by Dr. William M. Polk, dean of the Medical College, who died on June 23. His purpose in making it was to continue the John Metcalf Polk scholarship in medicine.

A FELLOWSHIP in applied chemistry, of the annual value of £200, has been established at Glasgow University by the trustees of the Ferguson Bequest Fund.

PROFESSOR RAYMOND BINFORD, head of the department of zoology at Earlham College, Indiana, has been elected president of Guilford College, North Carolina.

THE vacancy in the deanship of the medical college of Cornell University has been filled temporarily by the appointment of Walter Lindsay Niles, M.D., 1902, who will act as dean through the summer. Further action will be taken by the trustees in the autumn.

DR. A. J. BIGNEY, on leave from Moores Hill College, has been appointed associate professor of zoology in Syracuse University for the ensuing year. Irving H. Blake, A.M., instructor in Syracuse University has been appointed assistant professor of zoology in the University of Maine.

DR. IVAN E. WALLIN, who was recently advanced to an associate professorship in the school of medicine of Marquette University, has been appointed acting professor and head of the department of anatomy in the University of Colorado school of medicine.

AT Glasgow University Dr. Thomas Walmley has been appointed lecturer in anatomy, with special reference to embryology. Mr. A. McL. Watson has been appointed lecturer in physiology, with special reference to histology. Dr. John McL. Thompson has been appointed lecturer in botany, with special reference to plant morphology.

### DISCUSSION AND CORRESPONDENCE.

#### THE PREVENTION OF ROPE IN BREAD

DURING the course of an investigation of the physical and chemical properties of bread, which is being carried on by officers of the Sanitary Corps under my direction, our attention has been drawn to ropy bread. The development of rope at present causes a serious loss of wheat and leads to much annoyance and uncertainty in the manufacture of bread.

Quite recently Lieutenant E. J. Cohn has made certain observations which, if they could be made widely known, might greatly aid in controlling the present epidemic. Accordingly I venture to report upon them here.

The familiar practise of adding acid to the dough as a means of checking the development of rope turns out to depend upon the fact that what seems to be the common cause of the condition, the growth of *B. mesentericus*, can not take place in bread at a greater hydrogen ion concentration than  $10^{-5}N$ . At the present time the addition of wheat substitutes in bread-making complicates the situation in two ways; first, because such substances commonly produce a less acid bread, and, secondly, because it is more difficult to find out what quantity of acid is desirable on account of the constantly changing conditions.

It is possible, however, to measure the hydrogen ion concentration of bread by the addition of the ordinary solution of methyl red (0.02 per cent. in 60 per cent. alcohol) to the freshly cut surface of the loaf. Three or four drops of the indicator should be placed upon a single spot and five minutes should be allowed to pass. Then, if the color is a full red without an orange nuance, the hydrogen ion concentration is approximately  $10^{-5}N$ , or more. If an orange tint develops, greater amounts of acid should be added to successive batches of dough until the test with bread just gives the desired color. Our experience seems to show that the growth of rope is inhibited as the hydrogen ion concentration approaches  $10^{-5}N$ , and that bitter flavor in bread appears only at greater acidities.

Professor Wollbach, of the Harvard Medical

School, has very kindly carried out the bacteriological experiments upon which these results largely depend.

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#### A MICROSCOPIC TRAP

WHILE examining a very rich culture of Protozoa, recently, I saw a living animal caught in the smallest trap that I have ever heard of, about  $1/13$  mm. in length. The animal was a small Infusorian, apparently *Colpoda cucullus* Mül., as well as could be determined in its cramped position in the trap. The trap was an empty shell of a small species of *Arcella*.

The Infusorian had apparently entered the opening of the empty test and then, after the manner of a fish in a trap, kept swimming around and around the periphery of its prison, thus never coming to the centrally placed opening. I watched it pretty constantly for an hour and a half and it apparently never ceased, for more than a second at a time, its

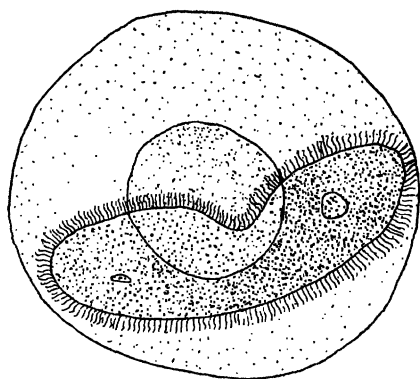


FIG. 1. A small Infusorian trapped in the empty shell of a fresh-water Rhizopod, *Arcella*. Camera lucida;  $\times 630$ .

forward or backward motion, except that, occasionally, it halted its progressive movement and whirled around rapidly, at a rate of 100 per minute, upon its median transverse axis.

After being under observation for an hour and a half it suddenly became quiet, and, but for the contraction of its vacuole about every

25 seconds, it seemed to be dead. Then it suddenly resumed its swimming and whirling motions, which were continued, with occasional resting periods, till observations ceased at the end of the day,  $2\frac{1}{2}$  hours from the first observation.

The slide had been sealed with oil to prevent evaporation of the water, so that the next morning the culture was in good condition, but the prisoner had escaped, during the night, from its trap.

The figure is a camera drawing, showing the animal in the trap, bent to the right, and indented on that side.

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#### A NIGHT RAINBOW

A MOST wonderful display of aurora borealis was visible on Mount Desert Island last night and had the moon not been at first quarter the brilliancy of the display would undoubtedly have been still greater. It had its base on a long, dark, unbroken band abutting on the northern horizon and shot upwards toward the zenith in innumerable streamers of vast reach, lengthening and shortening and shifting like the beams of a gigantic searchlight. Suddenly at about 10:40 P.M. a band like a gray-colored rainbow darted across the heavens near the zenith, passing from northwest to southeast and ending at a point near but not at the horizon. Though it may be common I have never seen the aurora span the heavens in that fashion. It looked like a vast single-span bridge. Beginning west of Arcturus it passed midway between Lyra and Aquila and ended far down in the southeast. At its midpoint overhead it was about as wide as the line joining the three conspicuous stars of Aquila. It seemed to be lower than the firmament, creating the impression of pulling the sky downward and giving a limit to space. Unlike the streamers first seen it did not suggest a searchlight but rather a band of delicate gray veiling, shining, yet not luminous—a night rainbow. It was densest near the zenith but even there the stars were visible through it.

For about thirty minutes little change could