the basis of our own? How likely are we to judge it correctly if, under these circumstances, we insist on judging?

As for experiments on behavior relating particularly to mimicry and warning color, there appears to be only one series that was at all adequate. They were the tests made by Reighard[3] on coral reef and other small fishes and their neighboring predators. Professor Carpenter does not mention these experiments. They turned out to be against the warning color theory, and upset a number of preconceived ideas of how these fishes behave and why they do so. Nor does he mention the stomach contents of birds (McAtee[4]), which are one of the consequences of animal behavior. These go to show that many animals held to be protected, whether through imitation or otherwise, are not very immune to capture after all. It will require a good many casual observations and brief tests to overthrow a thorough, analytical and objective group of experiments and a mass of concrete facts on feeding habits. That is why such tests should cease to be casual and brief. Nothing less complete than the Reighard experiments will suffice, and students of mimicry are urged to make their tests of behavior as full and inquisitorial. The only alternative is to refrain from drawing conclusions.

"Few critics seem to be aware of the great extent of the phenomenon." Were its extent twice as great, its problems would not be solved. What mimicry needs is not a broader foundation, but a deeper one. Those who have made known the large number of instances of it are in the best position to furnish this depth. It is to be hoped they will direct their chief energies to that end.

A. FRANKLIN SHULL

DEPARTMENT OF ZOOLOGY
UNIVERSITY OF MICHIGAN

HETEROTHALLISM IN VENTURIA INAEQUALIS

IN October, 1935, conidia from cultures obtained by isolating each of the eight spores of an ascus of *Venturia inaequalis* were used to inoculate the leaves of potted Fameuse apple trees that had been held in cold storage and recently forced out in the greenhouse. Conidia from each isolate were used alone and mixed in every possible two-isolate combination. Infection resulted from every inoculation, whereas uninoculated trees remained free from it. Leaves from the experimental trees were overwintered and examined microscopically for perithecia of *V. inaequalis*. None of the uninoculated leaves or those inoculated with conidia from any single isolate of the fungus bore perithecia. The results from the two-isolate inoculations showed that the eight isolates fell into two groups of four each. All the 16 possible combinations between these two groups yielded perithecia that bore ascospores. None of the 8 combinations in which conidia from an isolate were mixed with those from another within the same group yielded perithecia that bore ascospores, except in three cases, in each of which the fertile ascocarps were borne in a strictly localized area. These seemingly aberrant cases are thought to have been due to contamination. Cleared-leaf studies showed that perithecial initials were formed abundantly when single isolates or non-fertile mixtures were used, but they usually attained less than one half the diameter of the normal, mature perithecium. The experiment is being repeated with modifications and supplemented by pure-culture studies. The available evidence seems to justify the conclusion that *V. inaequalis* is heterothallic, each isolate being hermaphroditic and self-sterile.

G. W. KEITT
D. H. PALMITER

UNIVERSITY OF WISCONSIN

[3] J. E. Reighard, Carnegie Inst. Wash. Pub. 103: 257–325, 1908.

[4] W. L. McAtee, Smiths. Inst. Misc. Coll. 85(7), 1932. Also *Quart. Rev. Biol.*, 8: 209–213, 1933.

AN ANALOGUE OF PLATEAU'S SPHERULE

IF a falling stream of water is examined with a stroboscope at the point where it breaks up into drops, a tiny droplet may be seen formed apparently from the "tails" between successive drops. This droplet is generally known as Plateau's spherule, after the inventor of the stroboscope.

While emptying two flasks with special constricted necks, I was very much interested to observe a similar phenomenon which may be seen quite easily without the aid of stroboscopic vision. The necks of the flasks were so narrow (4.0 mm i.d.) that air entered in discrete bubbles. Between successive bubbles, tiny bubblets of air were formed which could be observed rising slowly through the solution.

The phenomenon was first observed while emptying a saturated solution of barium nitrate in 33 per cent. nitric acid from the flasks. When the flasks were filled with pure water for calibration, no spherules of air were seen on emptying. Apparently, the formation of the tiny bubbles from the thread of air, left as a large bubble breaks off, depends upon a suitable relationship between surface tension, mobility and density of the liquid, for a given type of neck. With concentrated 70 per cent. nitric acid the effect is not as good as with 40 per cent. acid although occasional bubblets may be seen. Fifteen per cent. alcohol is as good as the 40 per cent. nitric acid, and the effect may also be seen quite well with 95 per cent. alcohol. With ethyl ether the formation of the spehrules was also observed. In this liquid there were frequently three